THE ART OF BOLT

WALT DISNEY PICTURES

By Mark Cotta Vaz

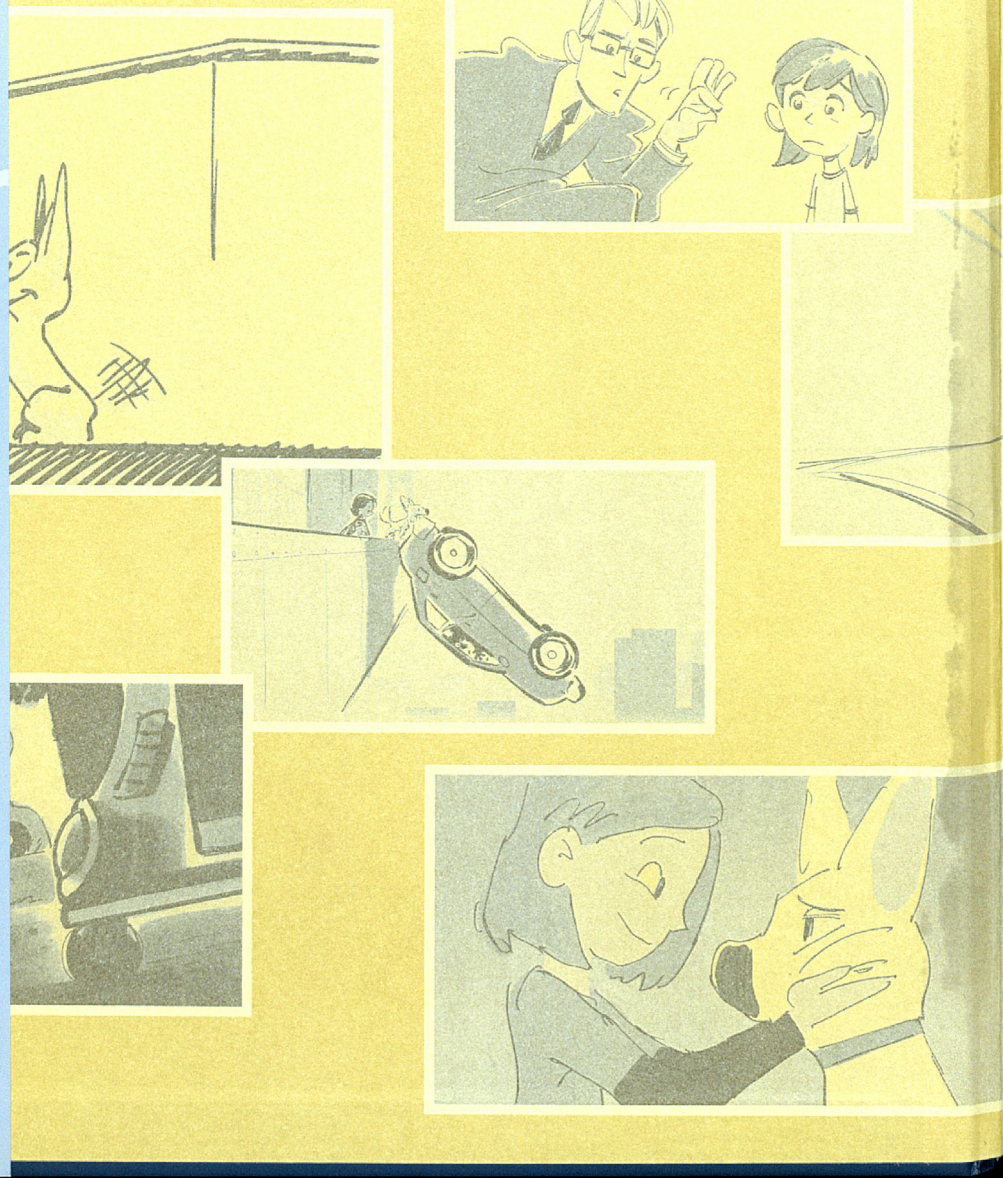
Foreword by John Lasseter

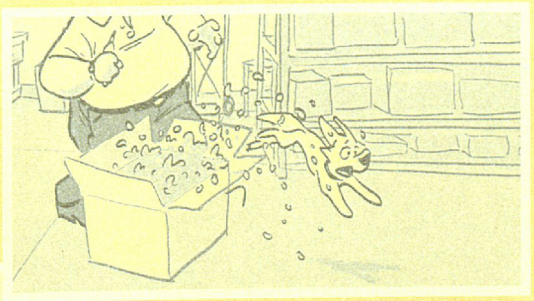
Introduction by Chris Williams and Byron Howard

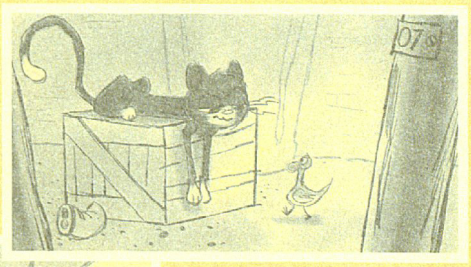
$40.00 U.S.

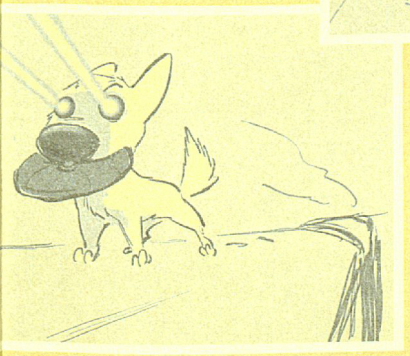
Meet Bolt: dashing superdog, loyal companion, and star of a hit television show. When he learns the shocking truth—that this charmed life has been a lie—Bolt embarks on a cross-country adventure and discovers along the way that he doesn't need superpowers to be a hero.

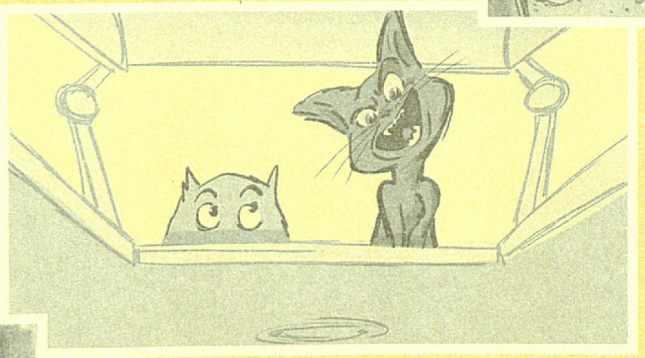
This beautifully illustrated volume showcases the wide-ranging concept art that inspired the film-makers and helped to develop the gorgeous "painterly" look of the film. Disney's talented artists have poured their hearts into the pieces presented here: full-color paintings of idyllic rural roadscapes, bustling Manhattan streets, and sunshine-infused Southern California studio lots; sketches and maquettes that are physiologically accurate yet perfectly caricatured at the same time; and story-board sequences that leap off the page with their energy and imagination. *The Art of Bolt* also includes interviews with the directors, artists, and designers, who discuss the challenges and rewards of producing an instant classic and celebrate the beloved past, vibrant present, and promising future of Walt Disney Animation Studios.

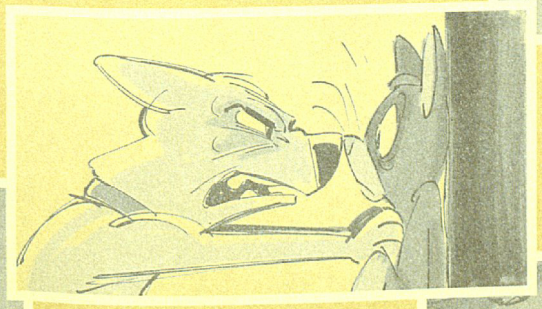


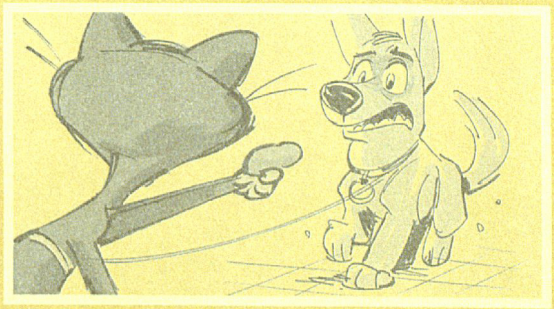


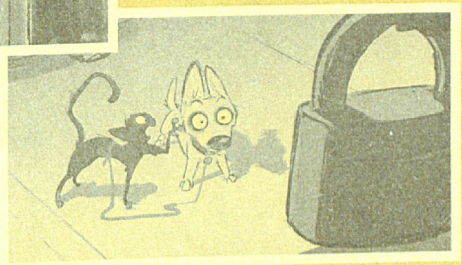


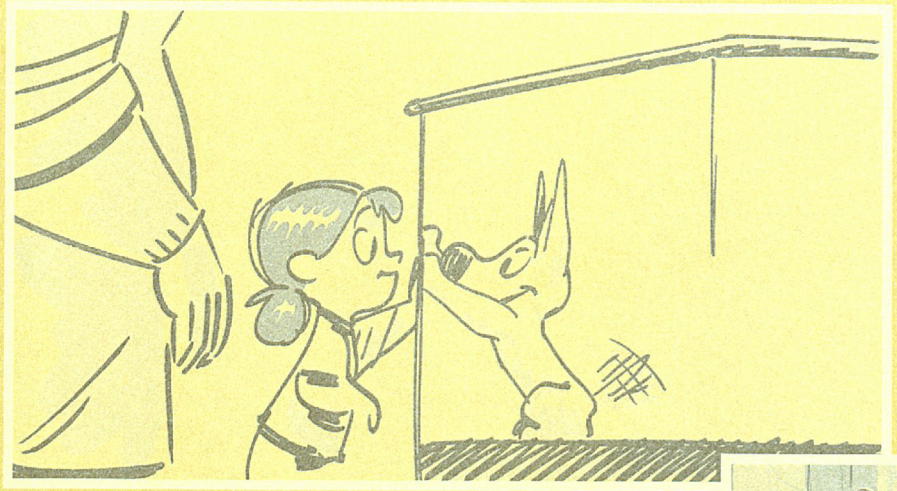


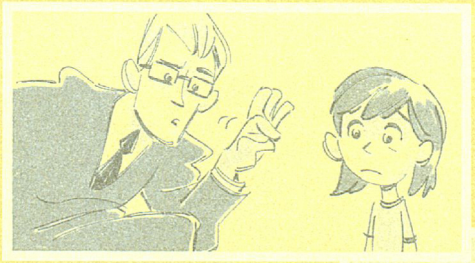


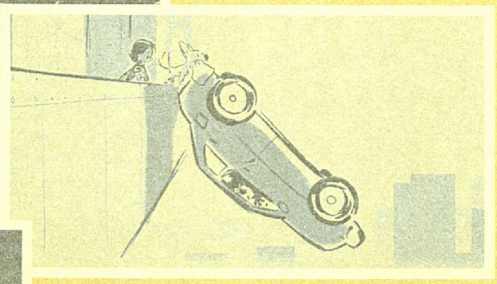


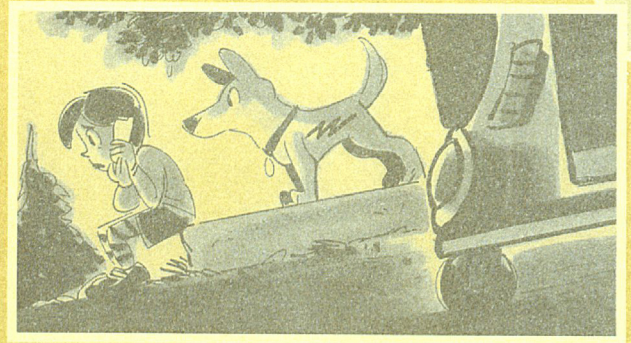


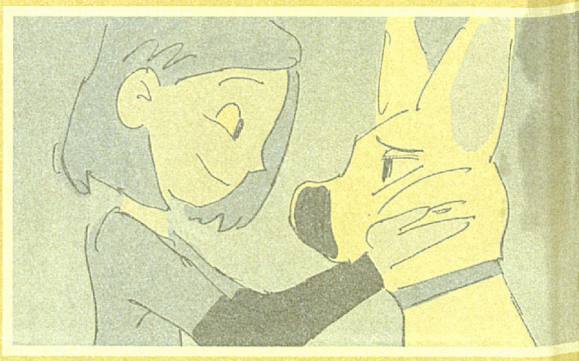


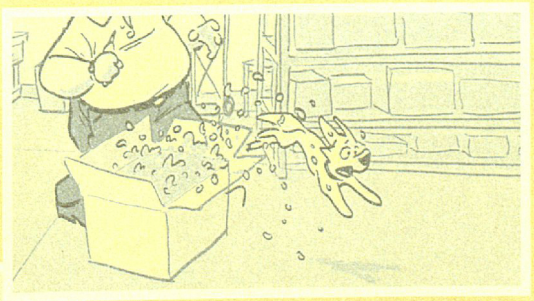


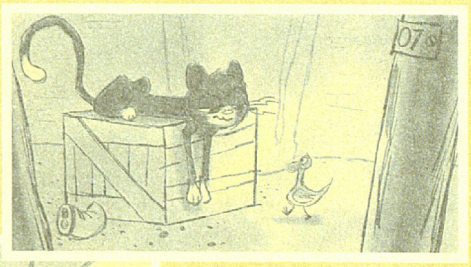


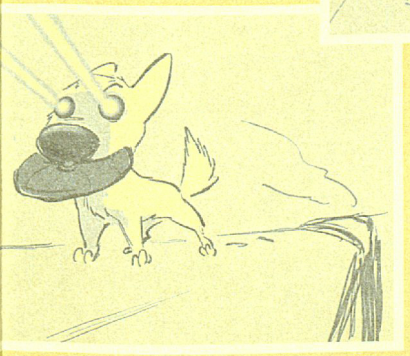


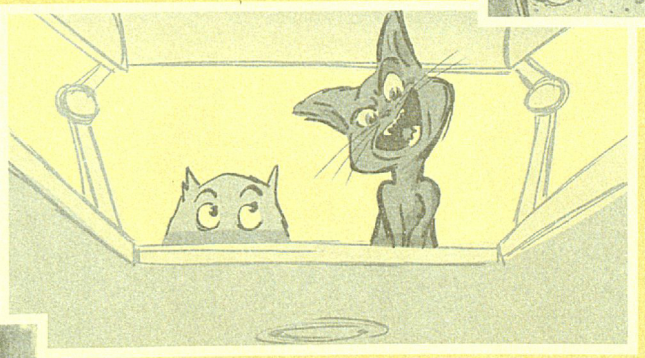


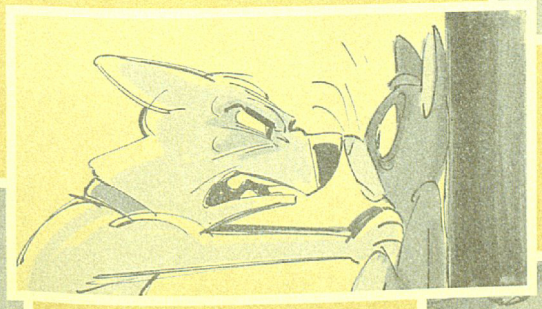


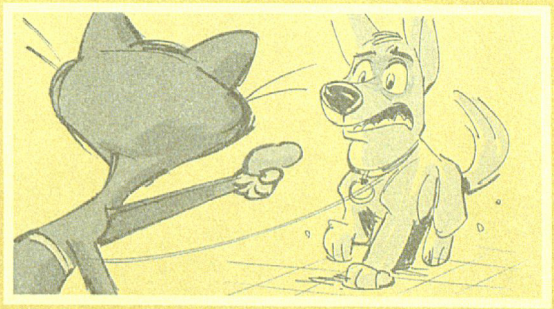


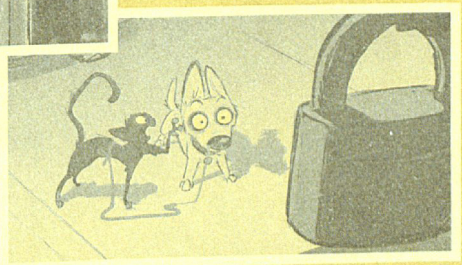












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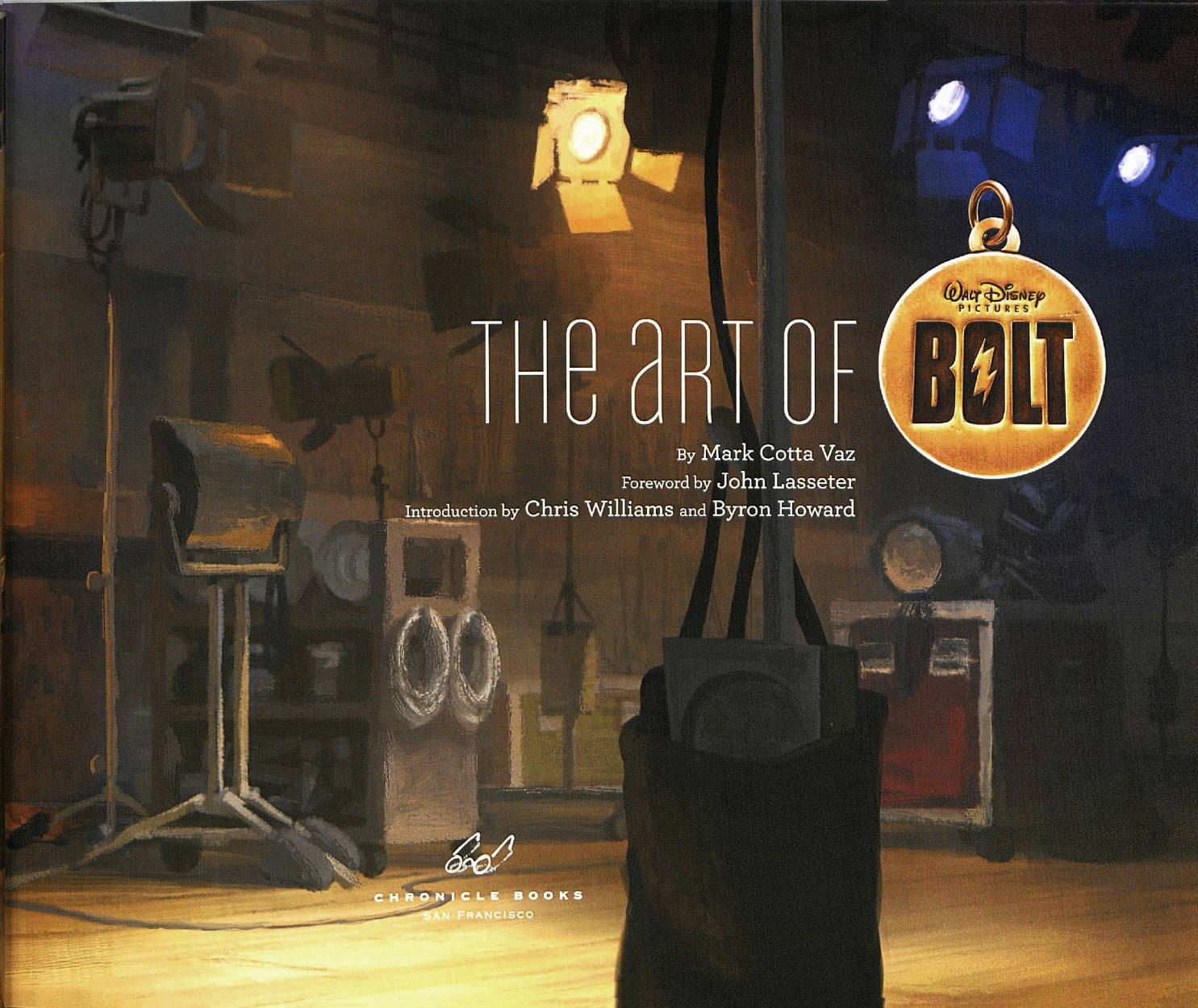
BOLT



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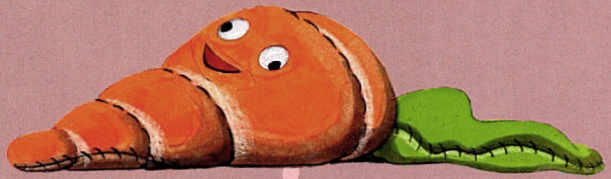
CHRONICLE BOOKS
SAN FRANCISCO



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(page 1) **Early Bolt & Mittens Character Design** / Byron Howard / graphite, digital
(page 2–3) **Interior Soundstage** / Greg Miller & Paul Felix / digital
(above & page 9) **Carrot Design Concepts** / Mac George / Marker

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FOREWORD

When I came back to the Walt Disney Animation Studios as Chief Creative Officer, I didn't know exactly what I'd find. The level of talent and artistry I encountered blew me away.

Bolt's art direction and technology teams were hard at work on an ambitious goal. They were determined to give their computer-generated film the feel of a 2-D painted background—that soft, water-colored sensibility artists know and love from hand-painted films such as *Bambi*. Their approach to introducing visible brushstrokes into a CG world was one of the most original I'd ever seen. It's tough to achieve the looseness of hand-painted backgrounds in CG sets because the computer by nature likes things to be perfect—with sharp lines, angular edges, and uniform textures. But the look they've accomplished for *Bolt* evokes an emotional, impressionistic feeling that is nothing short of spectacular.

As innovative as the production design is, the artists made sure the style was always serving the story. Directors Chris Williams and Byron Howard have done a tremendous job creating appealing characters that are rich with caricature but are at the same time believable.

Bolt is a dog raised on a TV show who believes he has superpowers, and the story is all about how he learns what it means to be a real dog. Therefore it was vital that the characters' movements and mannerisms be recognizable as those of true animals—as our own dogs, cats, and hamsters at home. And yet, in our pursuit to render the animals believably, we didn't want to sacrifice any of the characters' appeal that we'd discovered in the 2-D drawings. There was such a charm in Byron's original storyboard sketches of Bolt, Mittens, and Rhino. We knew those drawings would never be seen, but we kept returning to them again and again throughout the animation process, to push the technology so that the characters made the translation from story sketch to screen with all the whimsy and joy that had initially made us fall in love with them.

I'm very excited to have this opportunity to share these fantastic drawings and the amazing artwork that has inspired this film.

–JOHN LASSETER

Waffle World Map Character Icons / Joe Moshier / digital

INTRODUCTION

One of the greatest things about directing a film is the vantage point it gives you to see and appreciate all the amazing things happening in each department, from look development to shot finaling.

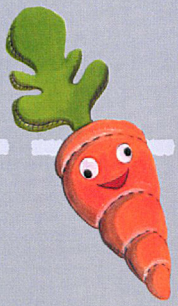
The Walt Disney Animation Building has always been full of artists producing phenomenal work. But John Lasseter and Ed Catmull have created an environment where all that talent ends up on screen. *Bolt* is the first Disney film John has been creatively involved in from beginning to end. There's such genuine respect for him in this building and this industry that he inspires us to challenge our own expectations of what we can accomplish. As the directors of *Bolt,* we feel lucky and honored to be able to bear witness, firsthand, to this tremendous cultural shift that is rejuvenating our studio.

Animated features are behemoths; massive undertakings requiring thousands of decisions and thousands of hours to complete. They are, by nature, an entirely cooperative effort. John Lasseter let us know early on that the best thing we could do for our crew was to give them a strong, emotional story with characters that they could love. That could not have been more true. As enthusiasm for *Bolt* grew, we could feel the crew take emotional ownership of the film. There was an atmosphere in the building where one department would produce something great and, in turn, inspire other departments to raise their game. We take great comfort in the fact that we are surrounded by such dedicated, talented people who take pride in their work and who love filmmaking as much as we do.

Looking through these pages you will see the work of only a handful of the amazing people that we make films with here at Walt Disney Animation Studios. The true works of art are the films themselves: an hour and a half of beautiful imagery, captivating characters, and amazing worlds, all brought to you by the 450 heroes of our crew who have proven to us that the impossible can become possible—if you're awesome. And they are beyond awesome. They are be-awesome.

–CHRIS WILLIAMS AND BYRON HOWARD

ROAD PICTURE



It's hard to miss the Walt Disney Animation Building in Burbank, which sits across from the studio Walt had built in the late 1930s. Atop a main entry canopy its purpose is spelled out in huge letters—ANIMATION—along with a gigantic version of the pointed wizard's hat Mickey Mouse wore while making mystical mischief in "The Sorcerer's Apprentice" sequence of *Fantasia*. More than a whimsical touch, that wizard's hat evokes the master of the animation universe, Walt Disney himself. When *Fantasia* was being created, the mysterious sorcerer was nicknamed "Yen Sid," Disney spelled backward, and the character's arched eyebrow mimicked Walt's facial expression when, as the original *Fantasia* theatrical program noted, "[Walt] confronts something that is good, but not good enough."[1] That ethos spurred pioneering breakthroughs that advanced the entire field of animation.

RV Park Color Key / Paul Felix / digital

A new era dawned in January of 2006 when the Disney company announced its 7.4 billion dollar purchase of Pixar Animation Studios, the CG animation pioneer. Pixar president Ed Catmull was installed as president of both animation studios, and John Lasseter, Pixar's executive vice president, became chief creative officer. The new leadership had to evaluate films in production at Burbank, including *American Dog*. Catmull and Lasseter were intrigued by the production's look, a painterly approach to the world of computer graphics imagery that was nearing fruition, but story problems led them to call a halt to the production. In its place would rise a new CG production called *Bolt*, with Chris Williams, a veteran story artist who hailed from the glory days of *The Lion King*, assigned to direct. Early on, Williams partnered with Byron Howard, a distinguished animator and story artist, to co-direct on the ambitious project.

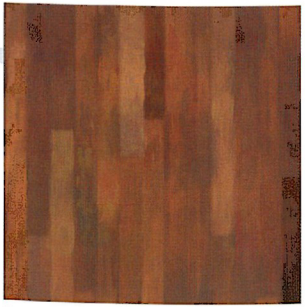
The painterly approach would be channeled into *Bolt*, which marked the first full-fledged Disney feature under the new leadership. Catmull and Lasseter would help guide the breakthrough artistic and technological design with an unsurpassed knowledge of CG animation that also embraced Walt's "good, but not good enough" push for excellence. Lasseter in particular viewed *Bolt* as a chance to reconnect with the studio's creative and artistic heritage, and was adamant that the painterly design not distract from "believability," which became one of the many mantras that informed *Bolt*. In the process, *Bolt* reconnected with the Disney tradition of using life studies and research to inform the environments and characters the production conjured.

Bolt truly began in January of 2007 with a story retreat in the bucolic Northern California wine country town of Sonoma. Chris Williams brought a vision for the story and characters to the high-powered gathering, which included production principals, Lasseter, and creative leaders from Pixar's "Brain Trust" and Disney's recently formed "Story Trust." Although *Bolt* would retain the original main idea of *American Dog*—a TV-show dog gets lost in the real world—an entirely new story and characters emerged from the two-day retreat, along with new "assets" (the computer-generated character models, props, and sets comprising a 3-D world). *Bolt* was also under the gun of the original, set-in-stone theatrical release date of Thanksgiving 2008, which made for a dramatically compressed production schedule.

Meanwhile, even as the new story was being developed, the painterly look neared its final stages of development. In fact, the studio applied for patents for its new techniques after Joe Marks, who had recently joined the company as vice president of R&D at Imagineering and Animation, attended a *Bolt* "tech pitch" and realized the filmmakers had developed something unique. Marks

Early Character Designs / Nathan Greno / digital

A



B

recalled, "The look of this film obviously involved new software and algorithms and if it becomes a signature look for the studio, we want to protect it."

"We got lucky with the transition because we proved a painterly approach could work," Sean Jenkins, Look Development supervisor, recalled of that nexus when *American Dog* ended and *Bolt* began. "People throughout the studio were excited about the early tests. This particular style really hasn't hit the screen before."

The creative journey began with the desire to evoke the painterly style of classic Disney animated features and American painters such as Edward Hopper, George Bellows, and Ashcan School artists from the early 20th century whose diverse subjects—lonely main streets, diners and roadside gas stations, seafront houses—also epitomized a spirit of Americana that supported the cross-country adventure. It was a formidable idea—the cold, calculating capabilities of the computer are inherently resistant to anything organic and loose, much less applying this type of look throughout an entire CG feature.

The visual development team included art director Paul Felix and a half dozen CG artists led by visual effects supervisor John Murrah and Look and Lighting director Adolph Lusinsky. The R&D was of particular concern to Lusinsky as his department, waiting at the end of the production pipeline, had to take gray, plastic-looking models and apply final textures and lighting. "Adolph has extensive CG experience and is an accomplished painter, which made him perfect to drive much of this initiative," Murrah noted. "He could take direction from Paul from a painter's point of view and translate it into the language of CG."

"Celebrating the classic Americana Painters such as Hopper was intuition, and Paul Felix ran with it, creating visual development pieces with the feel of the Disney legacy," Lusinsky recalled. "From the beginning of visual development, and for every test, we were thinking, 'Can we scale this technique up to 1,300 shots?' It had to be able to be used in every situation and simplified enough that 65 to 70 Look and Lighting artists could pick it up and implement it in a reasonable amount of time. It was a process of discovery. As we got deep in, problems unfolded and revealed themselves."

In January of 2005, visual development began in earnest as the team came to terms with "painterly." Hopper, Bellows, and the Ashcan artists were not considered Impressionist, but their classic impressionistic technique—blocking in basic shapes with washes of color and adding loose brushstrokes to imply detail, particularly as objects receded in the distance—became the model. Like impressionists, these artists' evocation of light and mood were most important to them, and they subordinated representational detail to them. "The first principle we focused on was the selective massing of detail, and detail receding with distance to create a simpler, yet more sophisticated, image and focus the viewer's eye toward a specific area," Murrah explained. "The cool thing was traditional Disney films contain the same principle. We were excited we could draw from the Disney legacy and [artistic influences] that were new to us as CG artists. We didn't want to generate this by code, or 'procedurally,' but wanted a hand-crafted look from our texture painters, to bring the Disney legacy of handcrafted art into the film."

The resulting "A/B Look," developed by Look technical director Patrick Dalton, allowed CG artists to emulate a painterly

Look A/B Box Car Test / Paul Felix, Adolph Lusinsky, Tracy Church / digital

approach using two separate paint layers fed into special "shaders" (the code a geometric surface looks at to obtain its color and properties, which affects how surfaces react when lit). The first A/B test, a painting of a wooden train boxcar interior, began with texture painters laying a loose, impressionistic wash suggestive of wood texture, then a second painted layer of detailed wood. "We could manipulate the wash and detail layers separately," Murrah explained, "so when we exposed our scene, areas lit by light had full wood grain, but we could strip out detail in the shadows and leave the wash layer, just as a painter who blocks in a painting and doesn't add anything to a shadow area. A/B gave us the freedom to select where and how to strip out details in our 3-D backgrounds before we lit and rendered a scene."

Then came the challenge of giving a brushstroke look to the straight, perfect edges that come naturally in the computer. The solution, first developed by CG supervisor Ernie Petti and then optimized by a team of technical directors, was dubbed "Ray Painting." John Murrah noted there were several stages in the process, beginning with modeling an object to avoid perfectly straight lines. Texture painters then followed the aesthetic established in Paul Felix's visual development paintings, applying specific brushstrokes from an arsenal of digital brushes Felix developed. Taking into account that a 3-D object becomes 2-D when rendered as a final film image, painters then mapped brushstroke edges onto an object using any number of flat, 2-D planes (or "cards"). "The results were amazing," Murrah noted. "At the final rendering stage, along with lights, contour, and color information, the brushstroke objects provided a [painterly] silhouette."

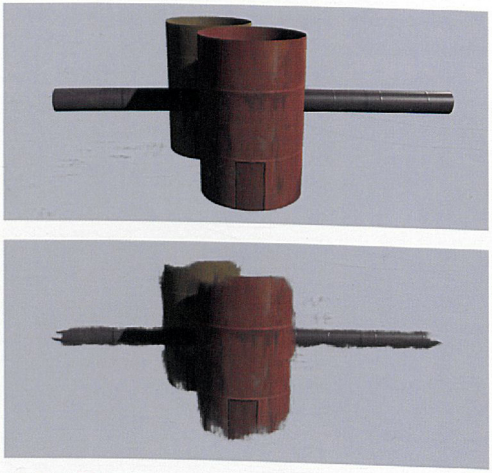
A/B and Ray Painting techniques were married in a Hopper-inspired nighttime tableau of a Midwest motel and corn field—this was the test painting that showed Lasseter and Catmull the potential of the emerging art design. In the fall of 2006, a series of diner car and train tests proved out the painterly approach and won Lasseter's enthusiastic support.

As *Bolt* geared up, the new techniques were calibrated for the new production. "We had to adjust the way brushstrokes looked to fit with the new characters, which were not as stylized and exaggerated as on *American Dog*—things are more tangible on *Bolt*," Lusinsky recalled.

A perimeter was established around the characters, with a guiding principle that dropped painterly effects. "We used the term 'blast zone' to describe the area around characters," Felix explained. "For example, if a character picked up a coffee cup, the cup would stay less painterly to mesh with the character. The nature of the art direction on *Bolt* was detailed objects surrounded by 'simple pieces,' which were more painterly."

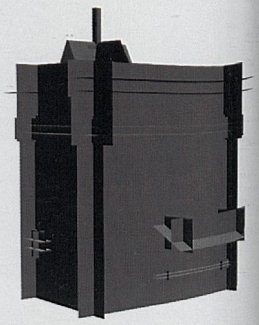
The painterly approach also relied heavily on the adherence to artistic goals that evoked Disney's past, which included studying production art from classic films (particularly featuring canine characters, such as *Lady and the Tramp* and *101 Dalmatians*), at Disney's Animation Research Library (ARL), the off-site archival home to an estimated 60 million pieces of original art. "Artists

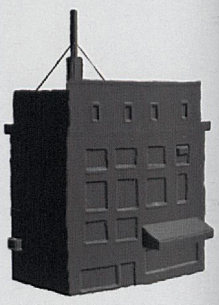
RAY PAINTING

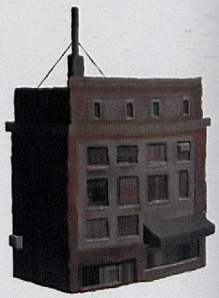


Ray Painting Test / Michelle Lee Robinson, Ernie Petti / digital

RAY PAINTING







Ray Painting Building Test / Dave Mooy, Michelle Lee Robinson / digital

LOOK A/B

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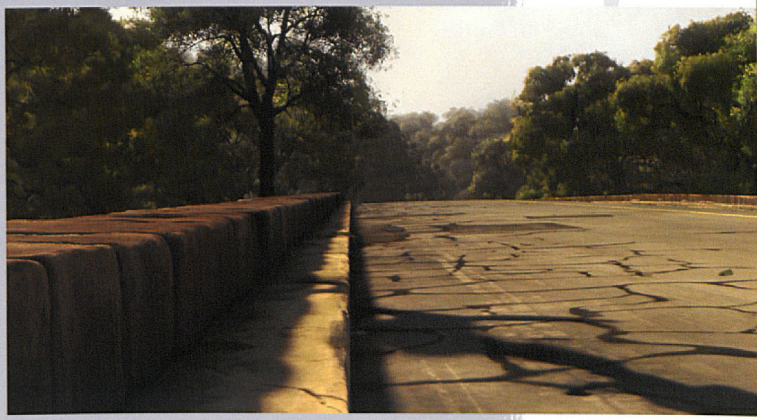

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Look A/B Renders / R&D development team / digital

who visit the library don't come just to see art from the past, but to study techniques artists used—it's reference, it's inspiration," director Lella Smith explained. "Concept and background artists come here and we pull backgrounds and they'll study how paint is layered, the way colors relate to each other. You see the amount of work that goes into character and location development, the background keys for color. You can look at *Snow White* with red hair and blonde hair and dark hair, and young and old—it shows how hard they worked to come up with the final look of the film."

A watchword of those classic Disney films had been that mantra of believability, particularly in presenting animal characters. *Bolt* marked a return to presenting normal physical characteristics, with artists and animators grounding animal characters in reality through lectures on physiology and muscle mechanics, and by studying reference photos and live animals (including an adopted hamster named Doink).

The research phase included the world itself, with the tale's cross-country journey informed by research trips that included a summer 2007 trek to New York, Ohio, West Virginia, Kentucky, and Las Vegas. "That was quite a summer, driving 1,200 miles in a couple of days, going down dirt roads that weren't on any map," Lusinsky recalled. "John Lasseter is big on research, and it was important for us to pull from real life to create a believable world."

Bolt evolved, with characters, scenes, and plot points reworked into 2008 and the shadow of the looming deadline. The story team, which included the directors, story head Nathan Greno, and five storyboard artists, went through the process perfected in Walt's day, with drawn storyboards developing each scene for a story reel (which was ultimately replaced with CG animation).

Lead character designer Joe Moshier estimates that he designed 30 to 40 characters for the director's consideration, with

Valley Rescue Painterly Test / Dave Mooy, Eric McLean, Pam Spertus, Alessandro Jacomini, Greg Miller / digital

Early Development Painting / Byron Howard / digital

dozens of takes per character. Art department packets detailing model design, textures, color, and lighting were supplied to the "downstream departments" charged with building environments. The production's painterly design reaped dividends, as locations could also be realized as matte paintings or through a "box set" hybrid construction that limits the number of model elements required to create an environment. Both approaches blended perfectly with the overall brushstroke effects—even the glittering Las Vegas strip could be realized as a 2-D painting.

Lasseter and the Brain and Story Trusts provided creative feedback throughout the production. In fact, *Bolt* was swept along in a spirit of renewal within the Animation Building, including buzz about the new painterly tools. "There's more cooperation, more cross-pollination, going on than ever before," Felix noted.

The production also met the challenge of that daunting deadline. "One thing that stands out is Chris and Byron, in a very short time, figured out the story and how to get it up [on story reels]," producer Clark Spencer reflected. "We started with only an idea in January of 2007, and eleven months later we had the movie up four times—no movie has ever done that! Most films take six to eight months to get up their first story reel, and we took three and a half months."

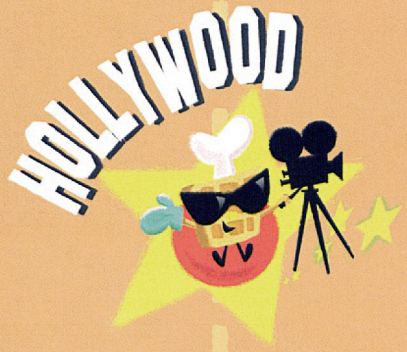
In the story, Bolt, the title character, plays a super-dog on a high-octane TV show whose mission is to protect his owner Penny from the evil Dr. Calico. The only problem is that Bolt thinks everything on the TV show is real. When the director decides to shoot a cliff-hanger episode, to keep ratings up, everything goes wrong. Thinking that Penny is in trouble, Bolt escapes from his trailer and accidentally falls into a packing box and is shipped to New York City. Armed only with the delusions that all his amazing powers are real, and with the help of two unlikely traveling companions, a jaded abandoned housecat named Mittens and a TV-obsessed hamster in a plastic ball named Rhino (named after Nathan Greno's fat, furry cat), Bolt discovers he is just a regular dog. And yet even after Bolt learns that his entire life has been a lie, he holds steadfast to the idea that Penny's love for him is real. "Things changed in the story, the personality of characters changed, but the beacon that guides you through is to know thematically what you're going for," Chris Williams explained. "The central concept of this film is what's real and what's not real, but the emotional core is Bolt's love for Penny."

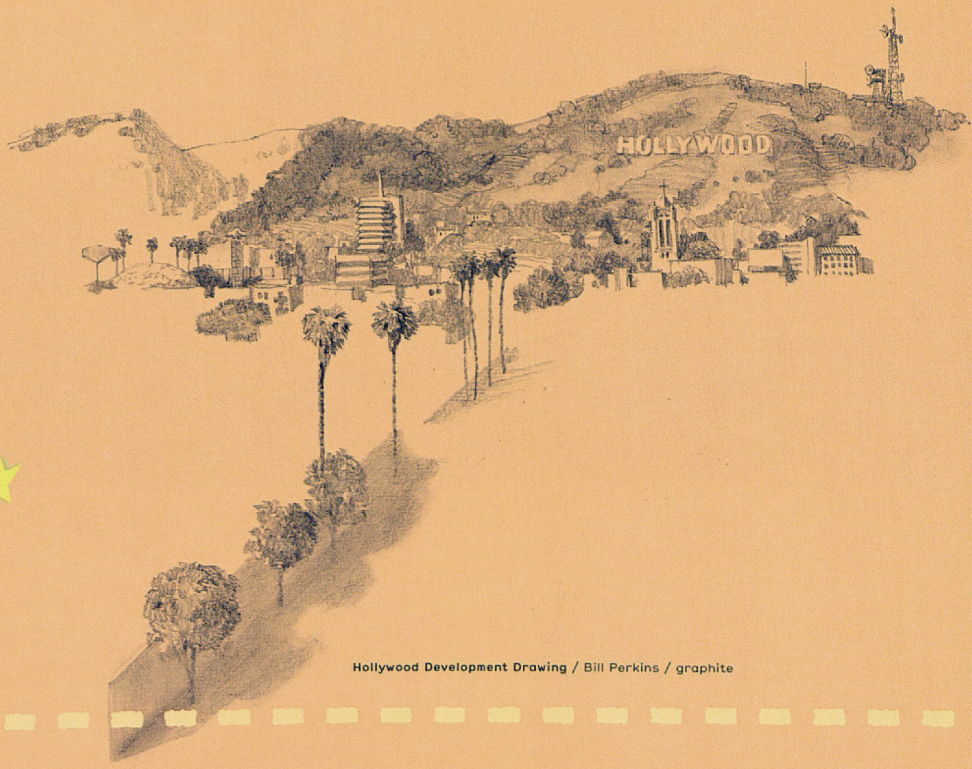
Animation historian John Canemaker once wrote that the wealth of artwork behind the art of a final film (what this book is about) was never meant to be seen by the public, but still resonated as "the bones and muscles of stories and flights of fancy . . . the graphic foundation that supports the images that gambol with freedom and insouciance on the screen."[2] What follows are snapshots from the creative journey that laid the graphic foundation for *Bolt*, marked a new era at Disney, and touched upon the fabled studio's heritage.

1. "Yen Sid" is from Neal Gabler, *Walt Disney: The Triumph of the American Imagination* (New York: Alfred A. Knopf, 2006), 205; "arched eyebrow" is from John Culhane, *Walt Disney's "Fantasia"* (New York: Abradale Press / Harry N. Abrams, 1987), 104, 200.
2. John Canemaker, introduction to *Treasures of Disney Animation Art* (New York: Abbeville Press, 1982), 13.

RATON

Los Angeles Streets Development Drawing
Bill Perkins / digital





Hollywood Development Drawing / Bill Perkins / graphite

HOLLYWOOD

Above and opposite: **Diner Test Series** / R&D development team / digital

"In this test from *American Dog*, you can see where the dining car goes into shadows and has rough edges—that's the technique we came up with [in 2006], to manipulate how an object is shaded to go from a photographic fall-off of light to a more brushstroke-like progression from light to dark. It's not the way the [CG] model is built, but the way it's lit that gives that effect. These brushstroke-like edges aren't built into the models, but appear when a texture painter dictates how surfaces will respond to light."

–PAUL FELIX, *art director*

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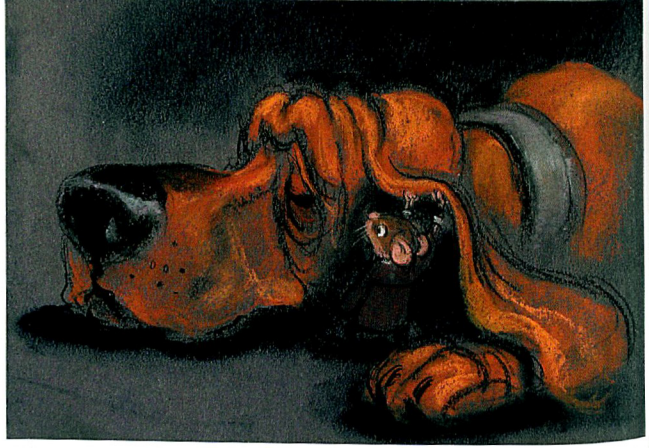
"[Art director] Paul Felix and a number of artists involved in the production and character design for *Bolt* came to the Animation Research Library. They wanted to hearken back to a period when 2-D animation had a unique look, not the CG rendered work they were accustomed to, and we participated in their early explorations. We started with the obvious, like *Lady and the Tramp*, but they also looked at the painterly styles of master artists both here and outside Disney. The key word, in terms of the Disney animation tradition, is verisimilitude. Disney has a definite philosophy, both technically and artistically. It's the title of [famed animators] Frank Thomas and Ollie Johnston's book, *The Illusion of Life*, the idea that something doesn't just look nice as it moves from one end of the frame to the other, but has an inner life to it. So when you see *Lady and the Tramp* or *101 Dalmatians* or *Bolt* you'll know it's a Disney picture, because there's a through line in the way animation is produced here."

–DOUG ENGALLA, *researcher, Animation Research Library*

The Great Mouse Detective / artist unknown / ink, watercolor

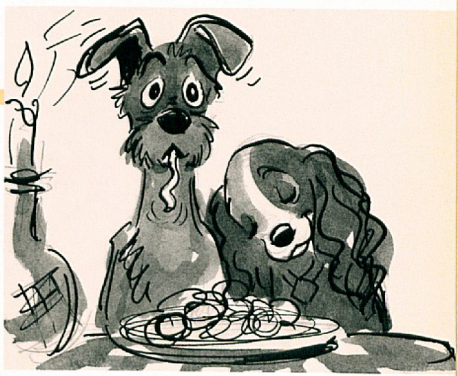


The Great Mouse Detective / Mel Shaw / pastel

101 Dalmatians / Eric Larson / graphite

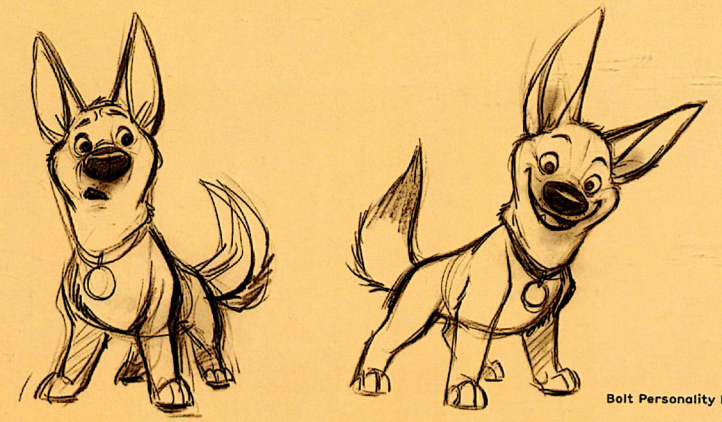
Lady and the Tramp / Milt Kahl (Tramp), Jerry Hatchcock (Lady) / graphite

Lady and the Tramp / artist unknown / ink, watercolor



Lady and the Tramp / artist unknown / cel paint, ink, gouache

Bolt Design Exploration / Joe Moshier / graphite, pen, marker

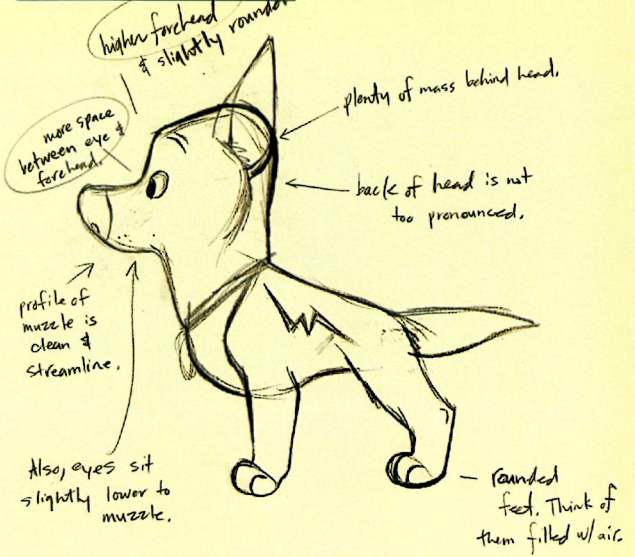


Bolt Personality Exploration / Jin Kim / graphite

"For me, the challenge of Bolt was designing a real dog and hair patterns that were stylized but still recognizable. Chris had ideas for the dog and he and Joe Moshier narrowed it down. The refinement took months and months. [Visual development artist] Jin Kim then fleshed out Joe's drawings in animatable poses."

–PAUL FELIX, *art director*

Bolt Design Exploration / Joe Moshier / graphite

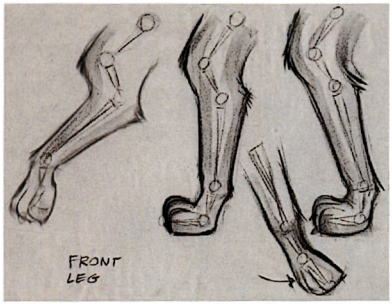


Bolt Design Elements / Joe Moshier / graphite

"We wanted Bolt to look confident and sure of himself, but maybe a little naïve. Personality usually dictates the look, so I consider silhouette, shape, proportion, and pose. Bolt's design was inspired by the American White Shepherds. They have really long ears, a trait I tried to caricature in order to allow the animators to emphasize Bolt's expressiveness."

–JOE MOSHIER, *lead character designer*

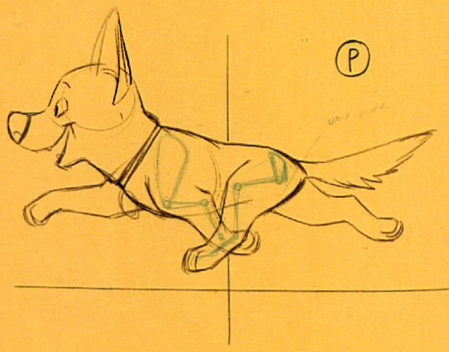
Skeletal Movement Study: Leg / Raffaello Vecchione / graphite



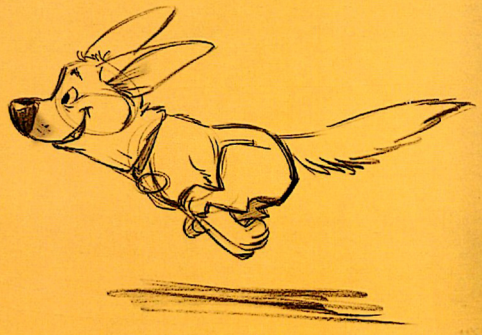
Paw Fur / Paul Felix / digital

"John Lasseter wanted us to use visual references, so we watched live-action clips of dog movement and behaviors, and Dr. Stuart Sumida, a professor of biology at Cal State University, San Bernardino, gave us around eight lectures on animal mechanics, muscle and bone structure, body language, and behavioral tendencies, then came in another four times or so to review how we were applying his lessons to our animation. On this film we started with naturalistic dog mechanics and then layered the performance on top of that. It was absolutely a return to the Disney roots."

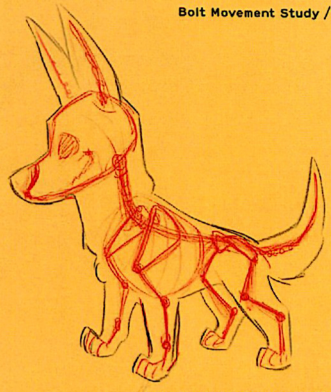
–DOUG BENNETT, *animation supervisor*



Bolt Movement Study / Jin Kim / graphite, pencil



Bolt Movement Study / Jin Kim / graphite



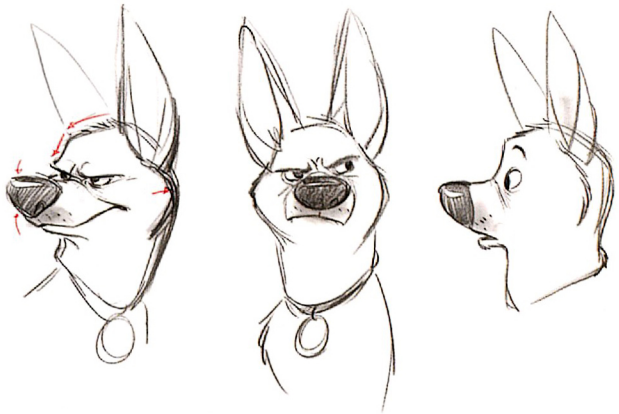
Bolt Skeletal Study / Jin Kim / graphite, pencil

"Animating a dog is quite complicated. Instead of two legs you have four, and the overall motion is something the audience is very familiar with, so it has to look perfect for everyone to believe in it. In the case of Bolt, the directors wanted a very subtle and natural performance as well, so you have a dog that needs to express human emotions while keeping his animal movements true to his nature. Capturing the little nuances of John Travolta's acting performance while retaining the same spirit and energy found in real dogs was a challenging assignment."

–RENATO DOS ANJOS & WAYNE UNTEN, *supervising animators*

Character Pose / Renato dos Anjos / digital

Bolt Character Exploration / Byron Howard / graphite, digital



Bolt Facial Expressions / Jin Kim / graphite

Action Poster Designs / Byron Howard / digital

Action Exploratory Painting / Byron Howard / digital

"Chen Yi Chang, who did the initial design for Penny, gave her big eyes, almost anime-like proportions. I springboarded off of that and added some roundness to her cheeks. Penny rides a scooter and is a very high-tech, modern teenager with electronic gadgets. At one point we noticed the eyes on Penny's model were a bit bulgy, so we brought them back into her skull. A CG model is like a violin, it's got to be sound perfect and look beautiful and be perfection, because a flaw in 3-D is going to be there forever!"

–JOE MOSHIER, *lead character designer*

Penny Character Exploration / Jin Kim / graphite

Penny Color Design / Jin Kim (drawing), Joe Moshier (color) / graphite, digital

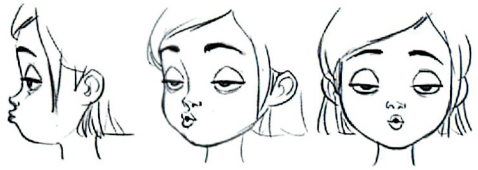
Penny Character Exploration / Chen-Yi Chang / digital

Penny Character Exploration / Jin Kim / graphite

Penny Facial Exploration / Jin Kim / graphite

Joe [Moshier] did initial designs and I would then do 'turnaround drawings' to explore characters from different angles. The goal was to not lose the sense of Joe's drawings, but figure how a character would look from behind, the side, and top. [When characters were close to being finalized], I'd do extreme drawings of facial expressions to show the range the 3-D model would go. Sometimes characters changed a lot. For example, the ears I did for Bolt were very large in the 2-D drawings, and the director thought they looked too big in the 3-D model. Sometimes a character that looks cute in a 2-D drawing will look weird as a 3-D model. I'm still learning how 2-D drawings translate into a 3-D model.

–JIN KIM, *visual development artist*

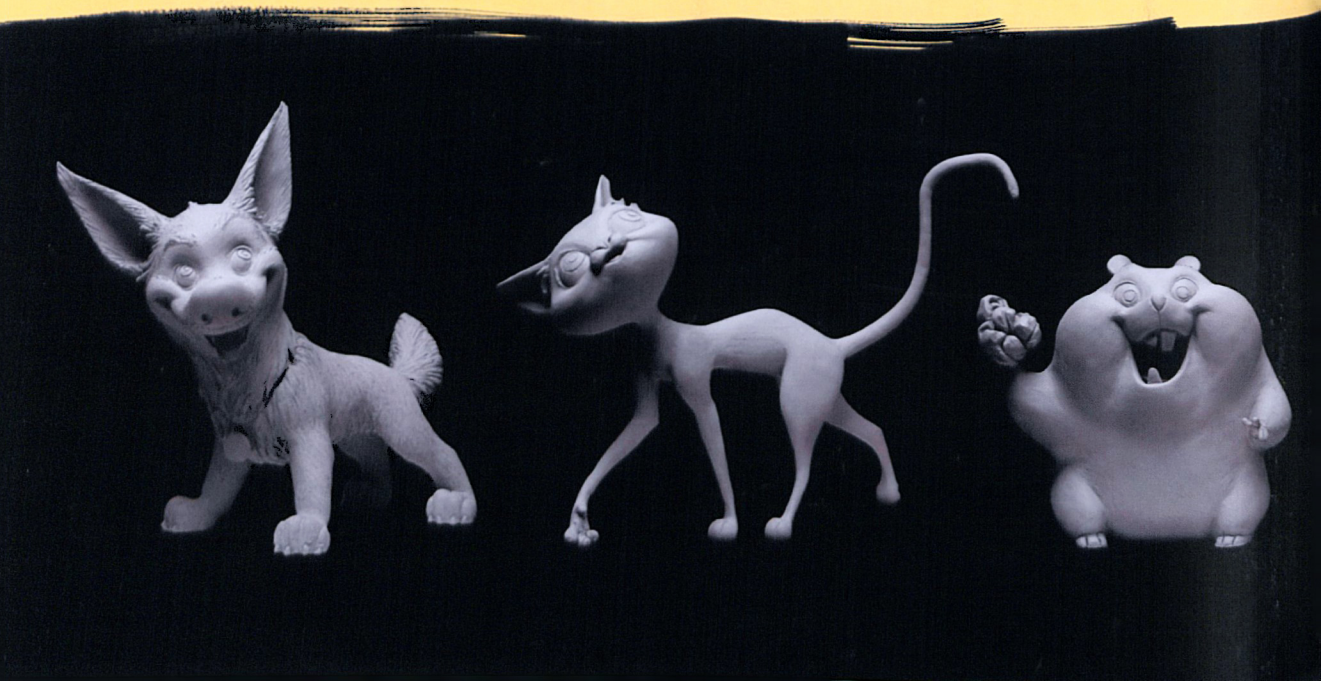


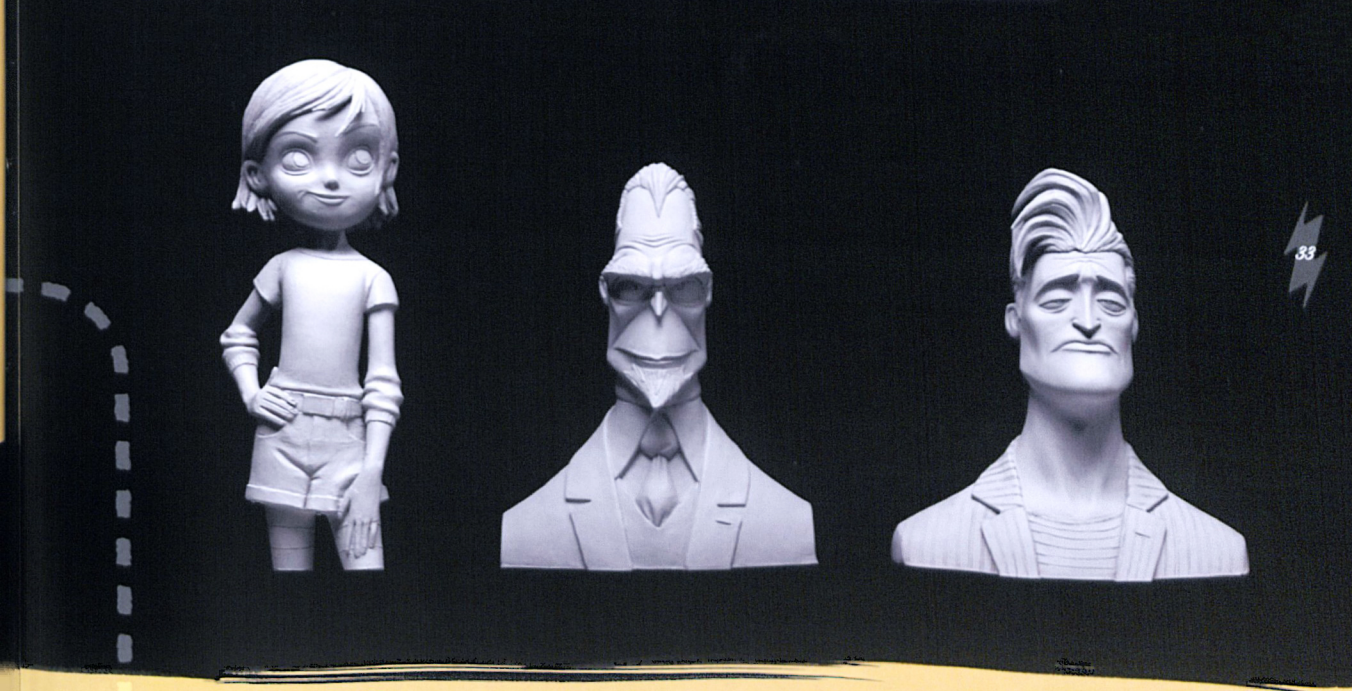
Penny Facial Expressions / Jin Kim / graphite

"Raffaello Vecchione, whom I've been working with since 1998, takes my drawings to the next level in three-dimensional sculpture. His sculptures [address] any outstanding design issues and provide tangible proof that they could be resolved in three-dimensions. What I love about his work is he doesn't shy away from straight planes and giving designs a lot of underlying structure. He was an animator and thinks like one. He's a rare talent."

–JOE MOSHIER, *lead character designer*

Character Maquettes / Raffaello Vecchione / Super Sculpey





"I try to find out which drawing of a character Joe likes best and go for it. I use Sculpey clay, which has the advantage of being quick to use. I put aluminum wire as a structure inside to move arms and legs and adapt or change the pose. I use tools and my fingers, just to make the first blob and keep refining. It has to feel right and make sense in the world of a cartoon. I add only enough [anatomy] to keep it solid, only what's needed, or otherwise you lose the flavor of the drawing."

–RAFFAELLO VECCHIONE, *sculptor*

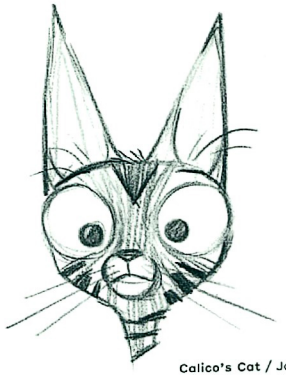
"It's fun to do villains and fuzzy animals—I like playing with extremes. Chris always wanted Dr. Calico to have wide shoulders. I gave him a much fuller chin in my initial designs, but he appeared a bit too powerful and strong. I then gave him a weaker chin and thinned his body and legs. We kept the broad shoulders to give him an imposing feel but also hunched his posture to keep him looking older."

–JOE MOSHIER, *lead character designer*

Dr. Calico Exploration / Joe Moshier / graphite, digital paint

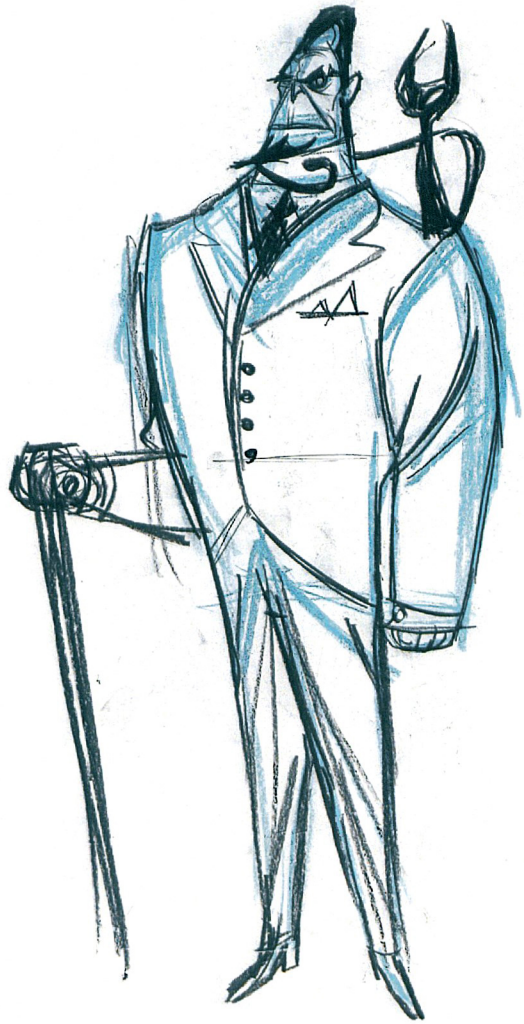
Dr. Calico Character Exploration / Jin Kim / graphite, marker

New Guy Cat / Joe Moshier / graphite



Calico's Cat / Joe Moshier / graphite

Calico Storyboard / Joe Mateo / digital



Dr. Calico Exploration / Joe Moshier / graphite, pencil

Early Development Painting /
Paul Felix / digital

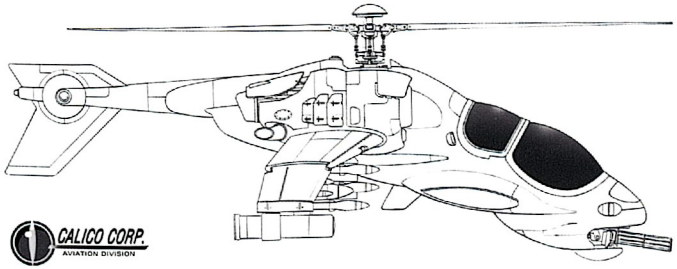
ADOPTION RULES
BEFORE YOU ADOPT

Chase Sequence Development / Jim Martin / graphite, digital

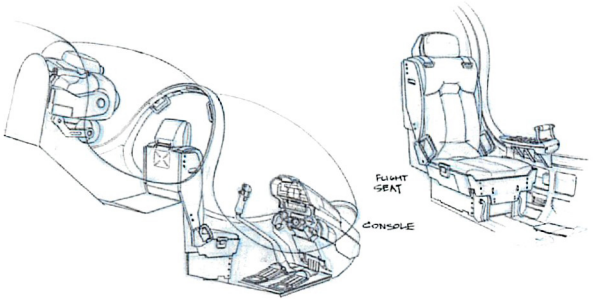
"On the TV show we pick up where Penny is being protected by Bolt as she's chased by bad guys who want to kidnap her so they can get her father to create a super-weapon for them. It's a crazy action sequence with motorcycles, SUVs, and other evil vehicles chasing them through this San Francisco–type city, with hilly streets and shipyards—the recent James Bond film, *Casino Royale*, as well as *Mission Impossible* and the *Bourne Identity* series were influential. I went to San Pedro [California] and did a harbor cruise to get the feel of a shipyard and take pictures of containers and ships. As with all locations, that photo reference was pulled together with our designs and directions into an art packet. For the shipyard, direction included everything from textural qualities to the font size of the letters on shipping containers. The modeling department then built from the photo reference, and painters added the different stains and textures."

–COLLIN LARKINS, *art department manager*

Penny's Scooter Concepts / Jim Martin / digital

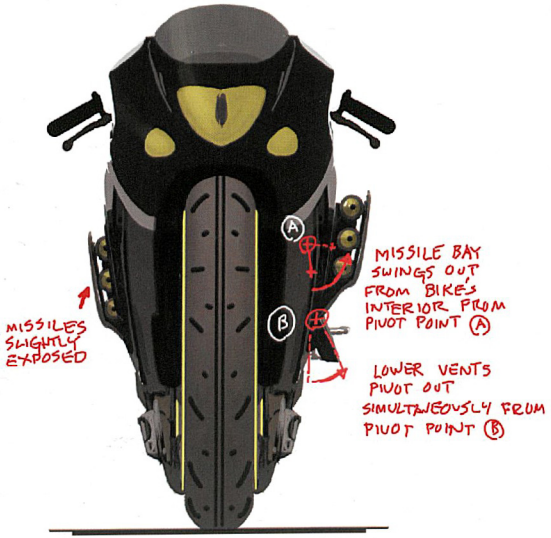


Helicopter Schematic / Jim Martin / graphite, digital

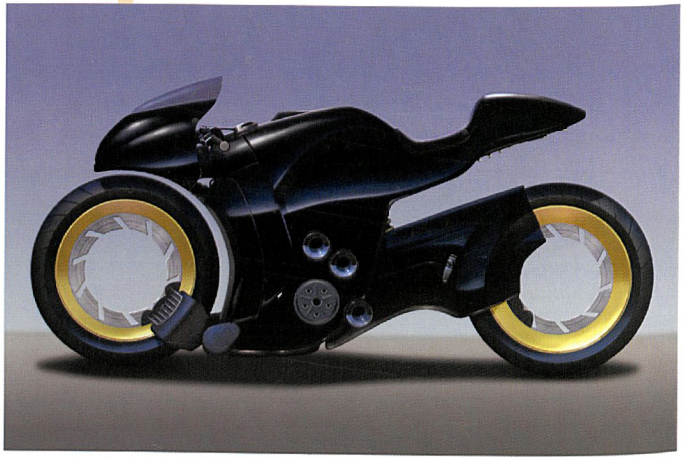


Cockpit Schematic / Jim Martin / graphite

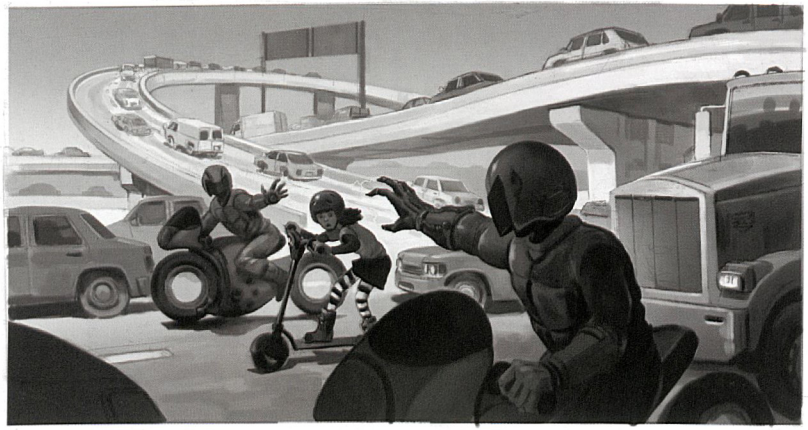
Calico's Helicopter / Jerry Loveland / digital



Missle Bay Design / Kevin Nelson / digital



Motorcycle Design / Jerry Loveland / digital



Chase Sequence Development Art / Jim Martin / graphite, digital

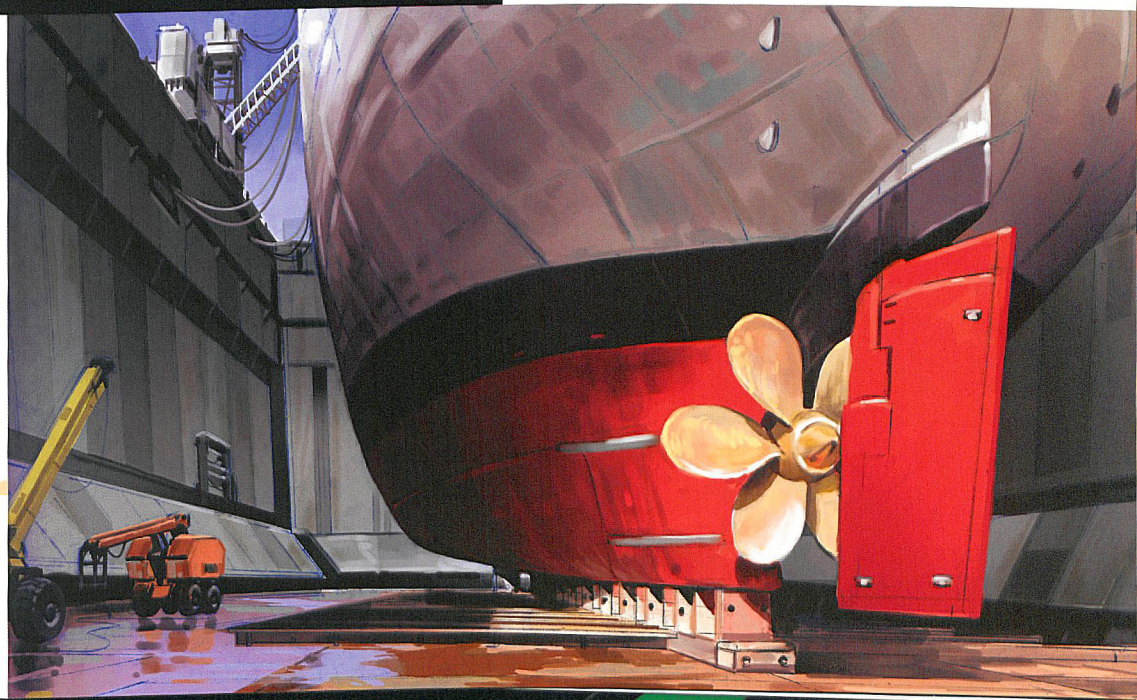
Shock Trooper & Motorcycle Design / Kevin Nelson / digital

Early Development Art / Paul Felix / digital

Shipyard Color Key / Paul Felix / digital

Development Art / Kevin Nelson / digital

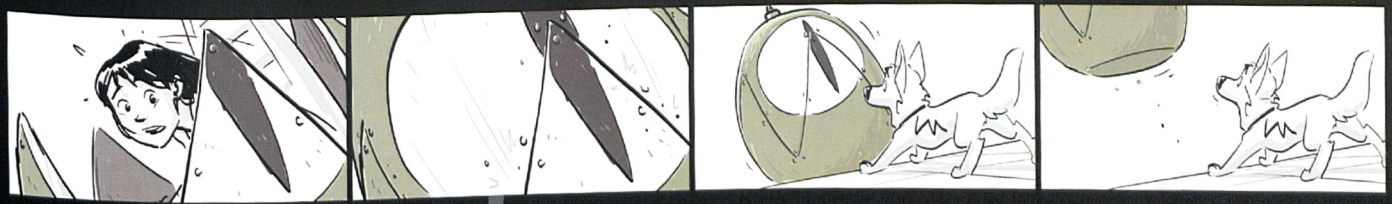
Hilly Streets Painting / Kevin Nelson / digital



Shipyard Design / Jim Martin / pencil, digital

> When we pitch boards to each other, we look for clarity in staging and screen direction, that drawings match the final look of the performance. When I'm assigned a scene, I try to come up with just one cool staging to get my mind going and then thumbnail everything. The painterly style of the movie doesn't show up in my boards, but I think it helped me subconsciously in staging everything.

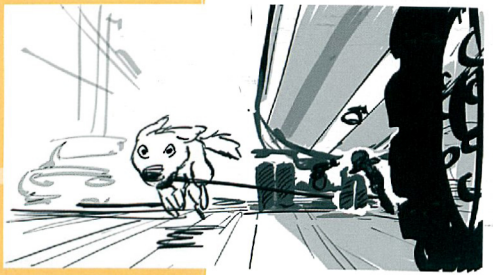
–JOE MATEO, *storyboard artist*



Jungle Command Storyboards / Joe Mateo / digital

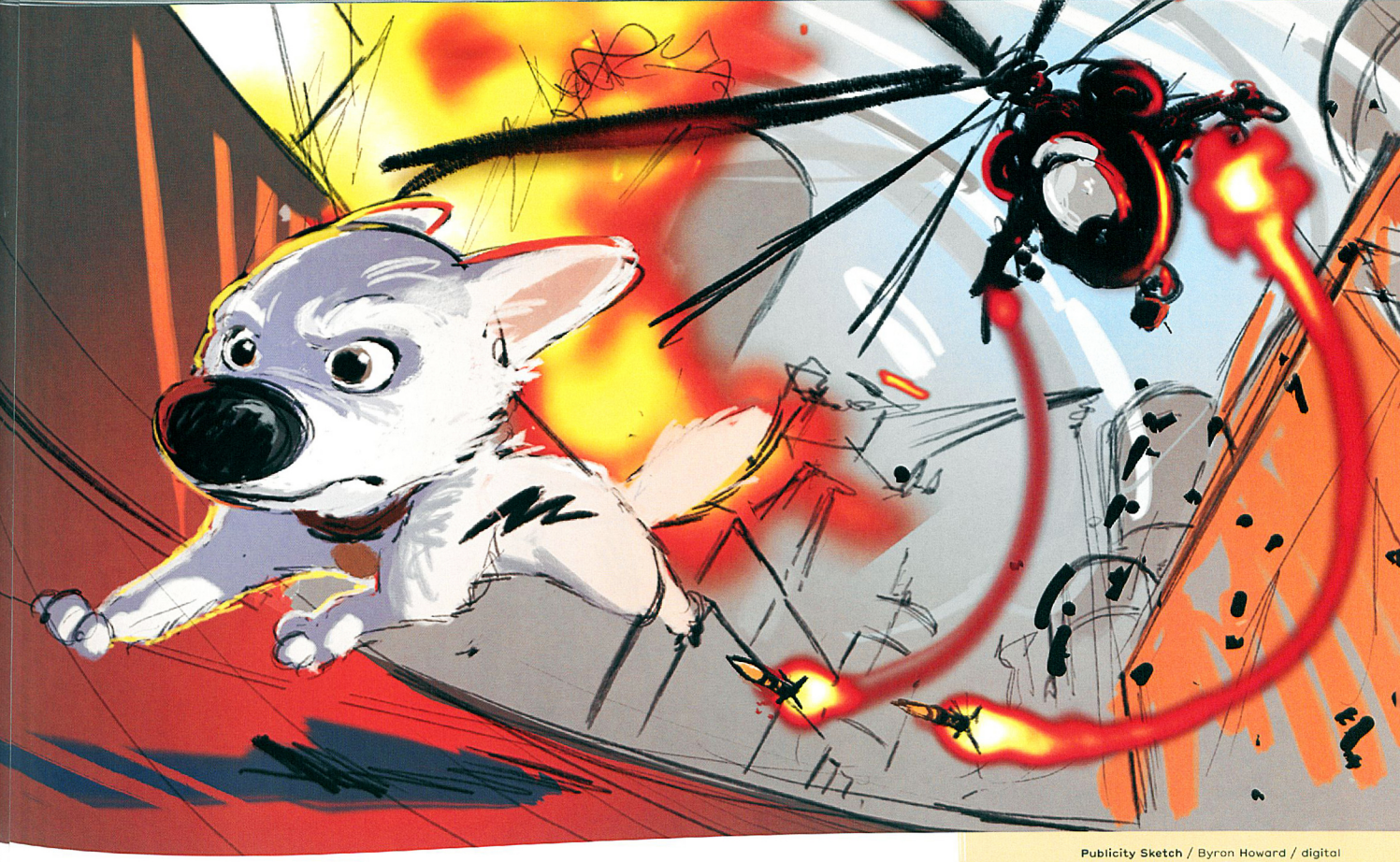
Airport Color Key / Paul Felix / digital

> The idea of the TV show is it's more live-action, James Bond style. It's hyper-real, but the way we lit and shaded it, we stayed within the realm of the film, which is very painterly. One of the important things is lighting, and some of the main influences for the look were painters like Edward Hopper, George Bellows, and other Ashcan School artists. What you see in their work is the play of light and how it affects the environment. So when there was an explosion, we tried to have the hot part near characters or the ground, and show bounce light, so it felt integrated with the environment and fit within the painterly world.
>
> **–DALE MAYEDA,** *effects supervisor*



Freeway Chase Storyboard / Dean Wellins / digital

Superbark Storyboard / Byron Howard / digital



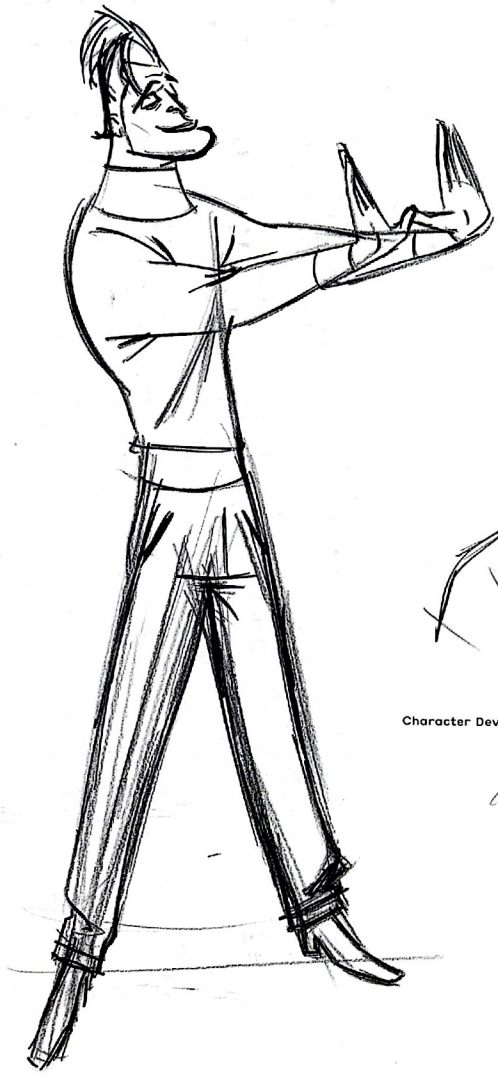
Publicity Sketch / Byron Howard / digital

Director Character Design / Byron Howard / digital

"Modelers often work from a series of fast, short-burst pencil sketches. Joe Mosher's wonderful character design for the Director is an excellent example of this. Working from his drawings, my initial task is to first define the subtle nuances of the character and then to digitally sculpt that "essence" into the Director model. Without exception, its always the subtle plane changes that separate a neutral model that is lifeless from one with a quiet heartbeat."

–DAN PLATT, *modeler*

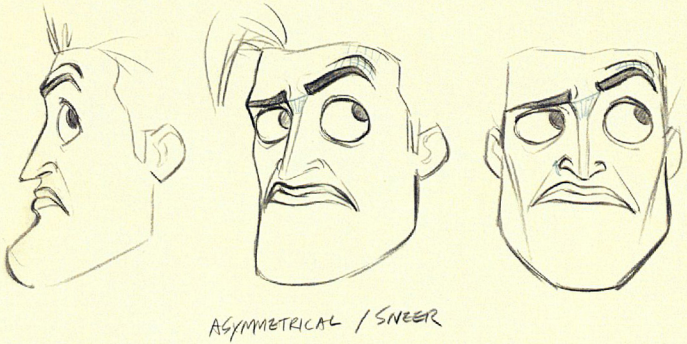
Character Development Art / Joe Moshier / graphite



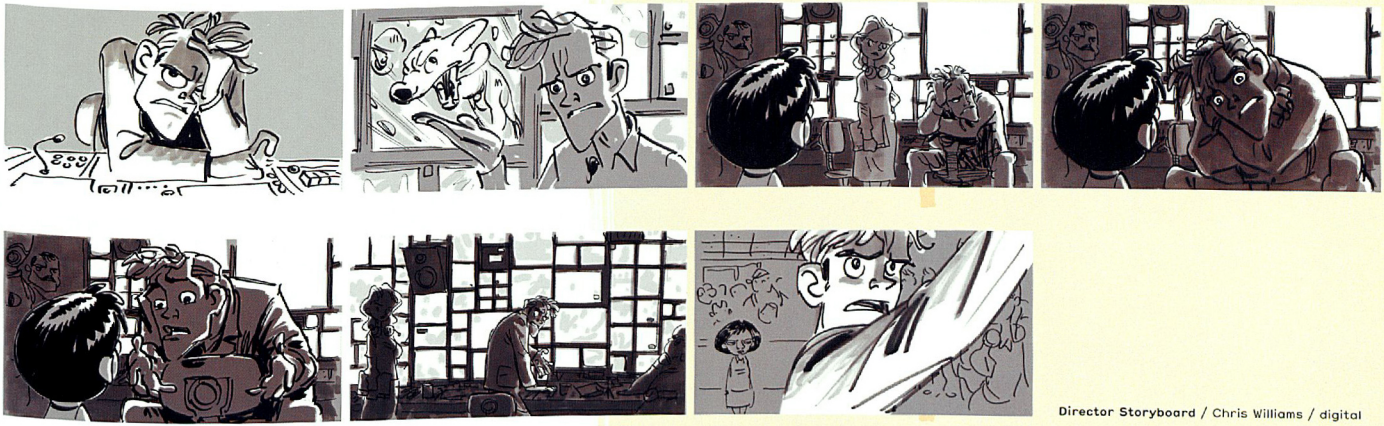
Character Development Art / Joe Moshier / graphite

"The notes that came out of one screening [December 7, '07] were to make the Director more of a Captain Ahab type who commands people around him. I boarded a scene and when John [Lasseter] saw it, he said, 'That's not how I see directing.' It's the Director and his crew together who are passionate about accomplishing something. So now when he says 'Cut,' all the camera people, tech people, and PAs [production assistants] file into the control room to see how the shot went. The change was to a more collective energy—'Did we get the shot and is it great?' John's input took it there."

—**CHRIS WILLIAMS,** *director*



Director Facial Expression Design / Jin Kim / graphite



Director Storyboard / Chris Williams / digital

George Washington Bridge / Paul Felix / digital

"There's a visual difference between the TV show and the real world. The TV world is more saturated, exaggerated-looking, harder-edged. When Bolt gets lost, the film gets desaturated, the environments more relaxed. But we couldn't entirely avoid the painterly look in the TV world because there were assets we had to use in [both] worlds, we didn't build things twice. A good example is the bridge we used for both the TV-show chase and the cross-country sequence. Also, many of the buildings used in the scooter chase are from the New York sets, repainted to look vaguely like San Francisco."

–PAUL FELIX, *art director*

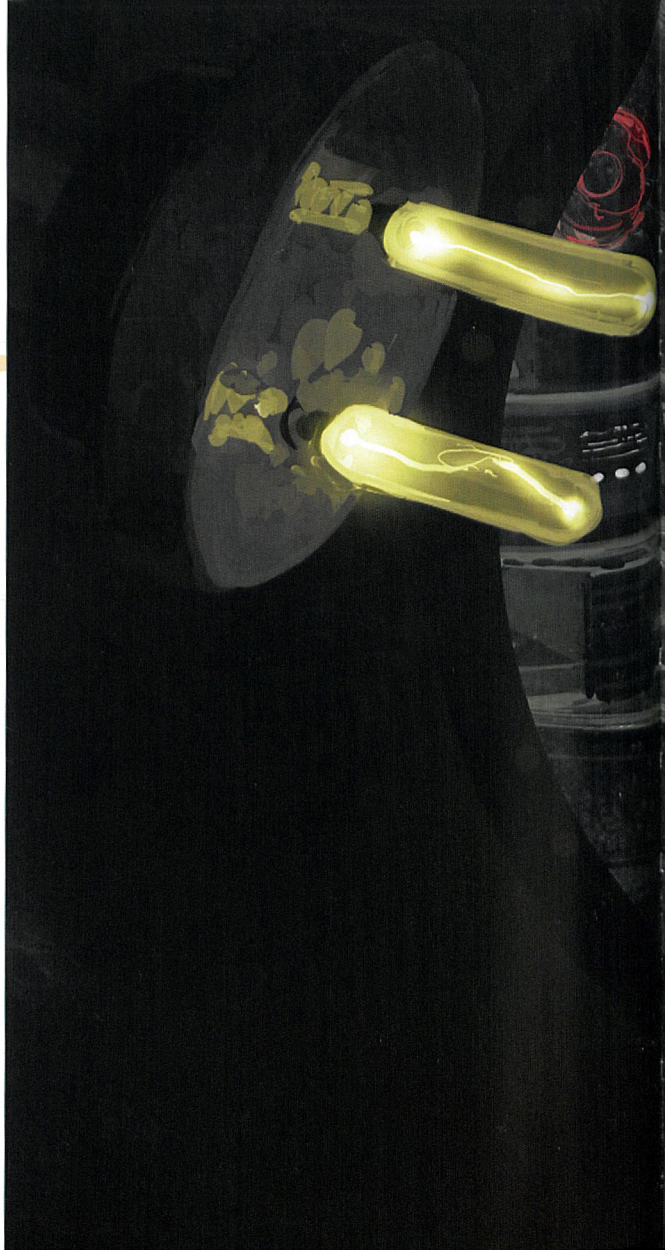
Sequence 3 Bridge Painting / Greg Miller / digital

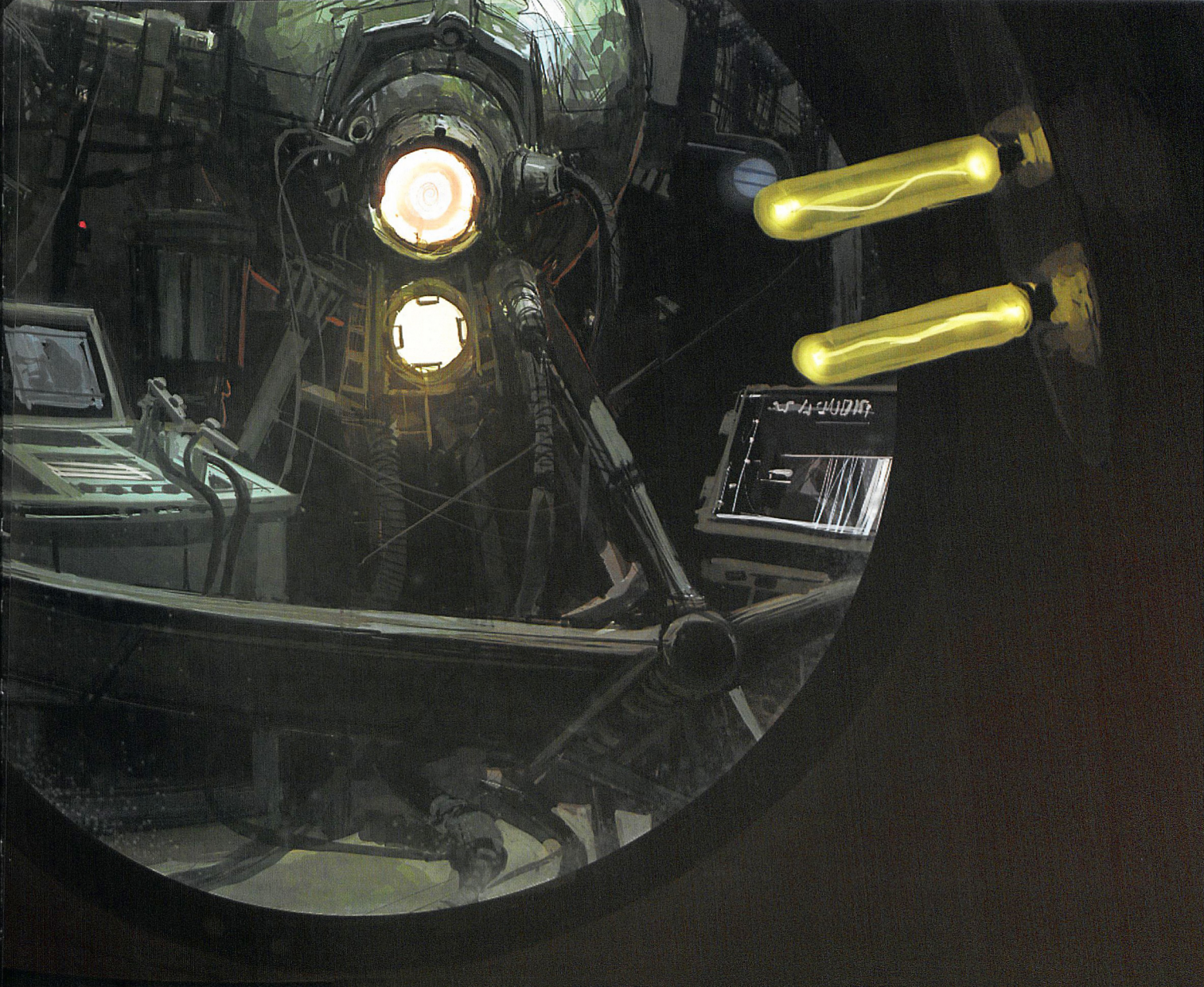
Dad's Lab / final film frame

Bolt is a painterly world, so we incorporated such painting ideas as 'massing,' simplifying complex details into simple shapes. The lighting aim was to feel photographic around painterly textures in the way light reacts to objects. On the TV set, the lighting is intense, it has the most clear and vivid colors—that's perfect in Bolt's world. The TV show has less naturalistic lighting, things are pushed to feel contrived. As they journey through the country, things will look more naturalistic. But there's always a balance to make sure things feel right at each point in the story, to not fight the story but enhance it with lights.

–ADOLPH LUSINSKY, *Look and Lighting director*

Dad's Lab Development Painting / Paul Felix / digital





R
RATATOUILLE
PARK

new york

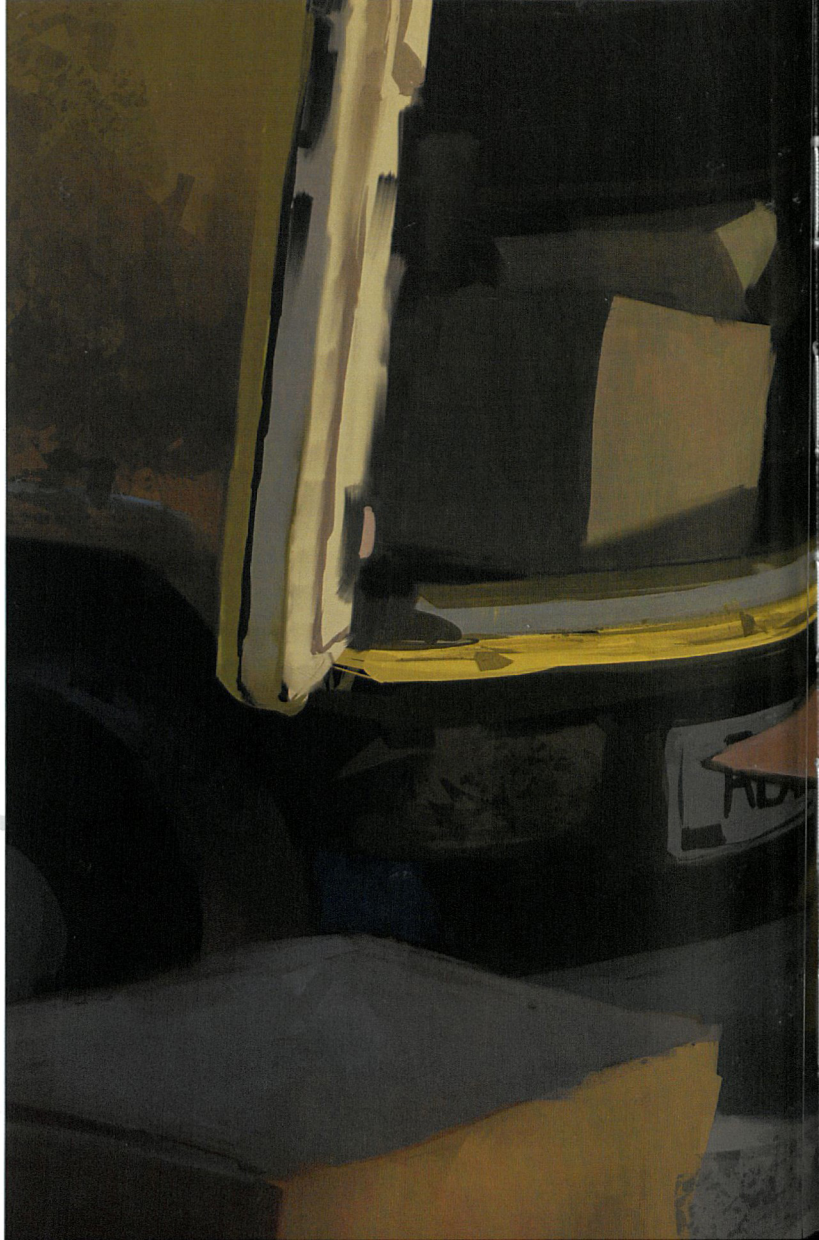
"From the get-go, the journey was going to start in New York. You want places that are kind of iconic, and we talked of Mittens, the cat, as being a street-smart kind of character, so New York seemed the logical choice."

–NATHAN GRENO, *story artist*

New York Development Painting / Ric Sluiter / digital

"The trick of this movie was how to propel the character of Bolt forward when he's running around in the real world and can't be questioning himself. We wanted people to identify with Bolt and not think he's a stupid character, so we needed some kind of 'Kryptonite' to rationalize why his powers are not working in the real world. How we did that was a matter of looking at what we had. Well, he's shipped to New York, so there's packaging material. We then had the idea of a pink packing peanut that's sucking away all his powers."

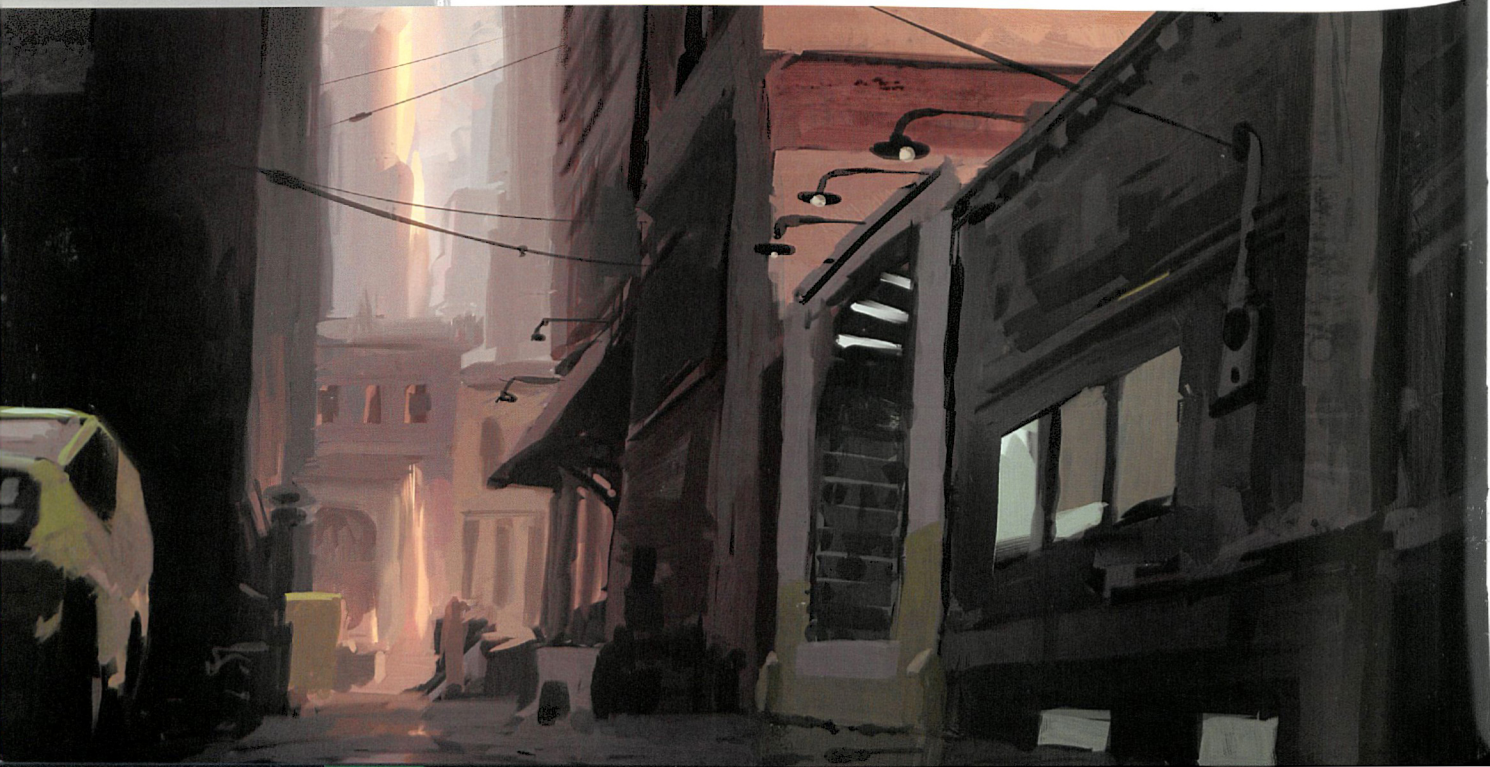
–NATHAN GRENO, *story artist*

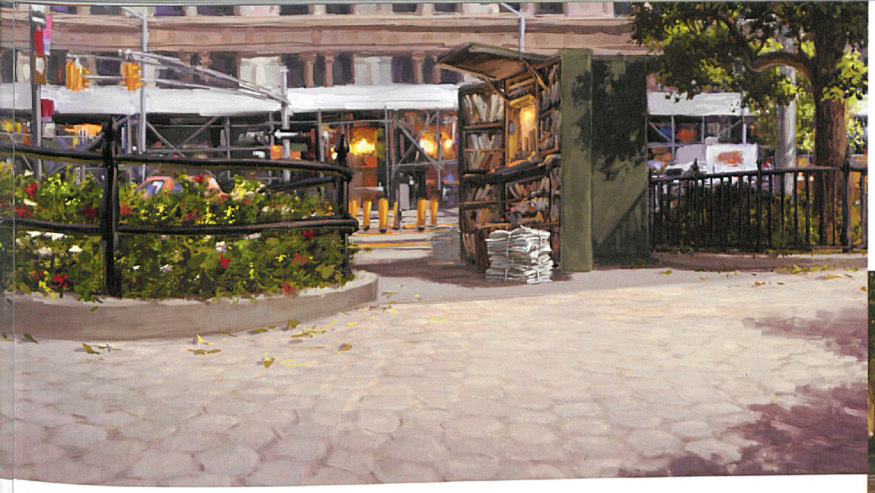


Early Production Art / Paul Felix / digital

New York Street Corner Painting / Greg Miller / digital

New York Development Painting / Paul Felix / digital





Madison Square Park Development Painting
Jim Finn / digital

Madison Square Park Development Painting / Jim Finn / digital

"Before we scouted New York, we talked to Chris about story points in regard to Bolt's character, so we could scout those parts of New York. We mapped Bolt's movements, so it's 7:30 A.M. when he escapes from the shipping department, which is around Broadway and 31st Street, and he's running toward Madison Square Park, away from the Empire State Building. We knew Bolt would be more in the garment district, so buildings would be early 20th century. By early afternoon he's on the moving van that takes him and Mittens over the George Washington Bridge and out of the city. We knew there'd be a scene with a freeway overpass and we found one in Manhattan, looking toward Queens. That was important, because a freeway overpass in New York is different from one in L.A., where things get rebuilt and retro-fitted and over-passes have mesh iron fences over them. New York has older buildings, scale and materials are different."

—**ADOLPH LUSINSKY,** *Look and Lighting director*

New York Overpass Painting / Greg Miller / digital

My worry was Manhattan in early morning could be in shadow and feel too 'vanilla.' The cool thing I discovered in New York was when the sun was so low it hit all the building windows and that reflected light acted as a warm light source, sending hits of sparkling light through the shadows. So, one side of the street would be in cool shadow fill, the other side filled up with all this dappled, reflected light.

–ADOLPH LUSINSKY, *Look and Lighting director*

New York Streets Painting / Greg Miller / digital

> There were several fur variants of Bolt created on the same model. On the TV show he's well taken care of, pristine and white; but when he gets lost in New York and has to travel 3,000 miles to get to Penny, he gets [dirtier and] darker.
>
> **–COLLIN LARKINS,** *art department manager*

Bolt Fur Variants / Jim Finn, (color), Ryan Duncan (fur) / digital

B: New York Trash

C: Train

D: Wet Smear

E: Dry Smear

F: Fire

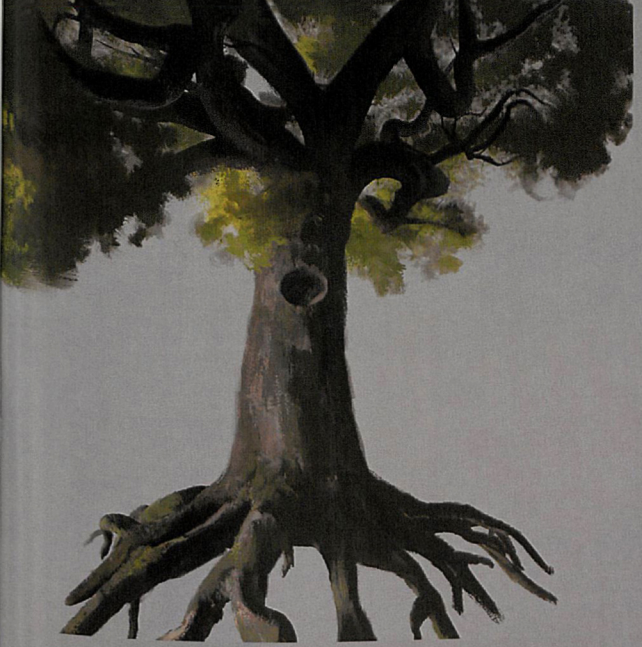
G: Farmhouse

Bus Bench / Jim Finn / digital

Vending Machine / Jim Finn / digital

Dumpster / Jim Finn / digital

Traffic Light / Jim Finn / digital

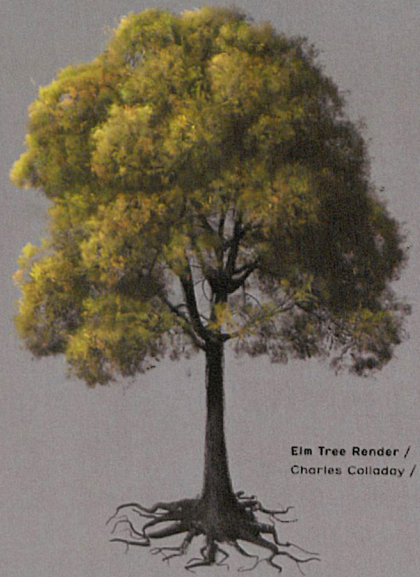


Oak Tree / Paul Felix / digital

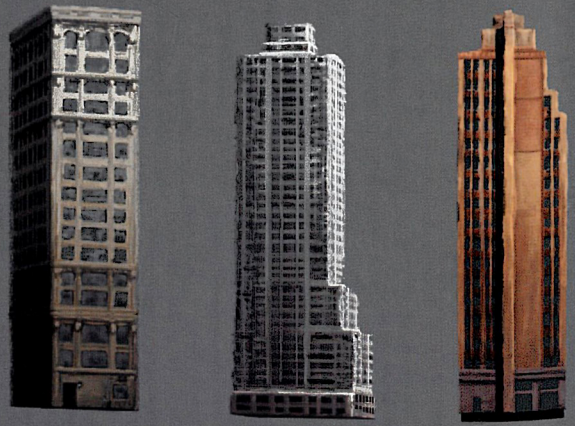
Look Development artists paint textures, define material qualities in shaders, and groom things like fur, hair, grass, and leaves. We observe what makes plastic look like plastic, what makes metal look like metal, etc., breaking down an object's material characteristics into a recipe of surface-quality ingredients so we can define each ingredient as a layer and build it up again for the final look. Layering allows us to subtly balance the ingredients to taste. In other words, we don't just pick a color, we decide how light should reflect off an object based on how dirty, clean, bumpy, transparent, and shiny it is. *Bolt* was an opportunity to go beyond the photo-realistic goal, and to match the aesthetic style of our art director, which was based on the painterly look.

–COLIN ECKART, *Look Paint supervisor*

Gardena Bush / Paul Felix / digital



Elm Tree Render /
Charles Colladay / digital



Rendered New York Buildings / Tracy Church, Vicky Lin, Leonard Robledo / digital

> In a computer, if it's a brick building, the computer automatically puts in bricks that go on forever, if it's a CG tree in the background, you'll see every single leaf. We had technology developed to take complicated detail and mass it together in simpler shapes, and we talked to our texture painters about 'editing your painting,' meaning they'd automatically act like they were painting a painting and edit out details and simplify what we were seeing. It was a new way to think. A painter masses in big shapes and then adds details to places they want the viewer to look. Our texture painters massed in big shapes with colors, we'd paint all the individual details of bricks, then strip out that detail in the lighting process to get loose textures.
>
> —**ADOLPH LUSINSKY,** *Look and Lighting director*

New York Buildings / final film frame

> We tended to break up elements based on how detailed they needed to be in the final image. Pieces in the foreground and center of interest were more detailed—we called them 'realized pieces.' Pieces supporting the overall composition, but not necessarily in the center of interest, we called 'simple pieces.'
>
> **–SEAN JENKINS,** *Look Development supervisor*

New York Development Painting / Paul Felix / digital

New York Development Painting / Paul Felix / digital

[An example of a 'simple' piece] is a distant building. In a cityscape some buildings are near and some are distant, but they are adjacent to each other in the image. The Look Development artists had the challenge of making both near and far buildings look like they were painted by one artist using one brush. If the brush that painted the small detail in the foreground buildings was used to paint the distant buildings behind them, the brushstrokes would cover larger areas of those distant buildings. As a result, the details on those distant buildings are simplified and blobby with loose edges, so they fit into the image as background objects.

–COLIN ECKART, *Look Paint supervisor*

Brownstone Development Painting / Paul Felix / digital

Madison Square Park Color Key / Paul Felix / digital

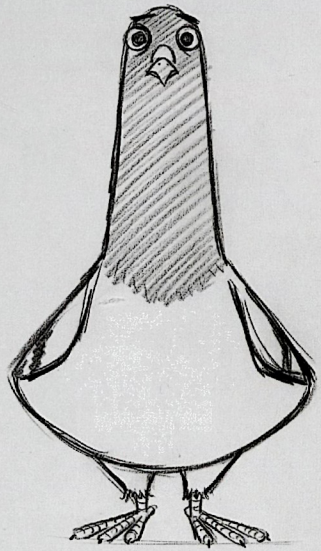
Dog Walker Development / Kevin Nelson / digital

Dog Designs / Byron Howard / digital

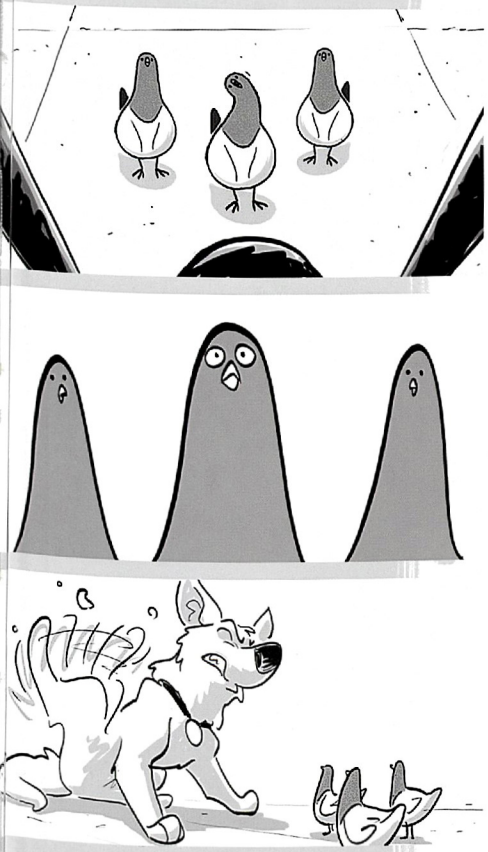
Pigeon Development Art / Joe Moshier / pen, marker

"In the beginning, I drew the pigeons very realistically. Chris Williams figured they were looking too real, that something was missing. Chris said, 'Why not just draw them like bowling pins?' So simple! Funny shape, two dots for eyes, and it worked! Amazing. One thing I learned working with Chris was that to make something funny, you draw it as simple and flat as you can, with not a lot of detail. If you stage something too detailed you lose [a scene's essence], what is being said."

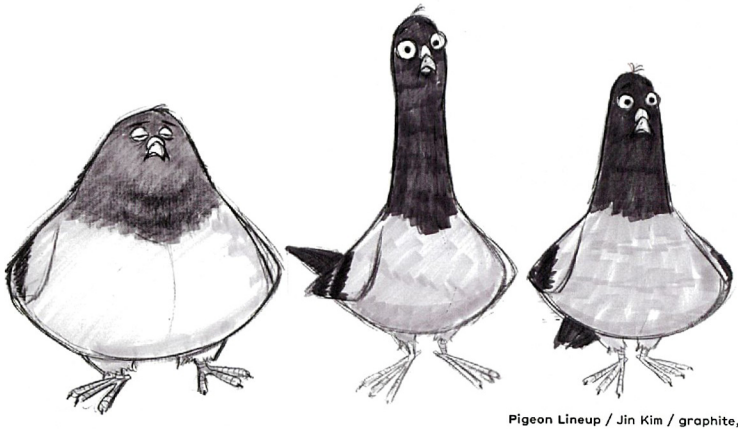
–JOE MATEO, *storyboard artist*



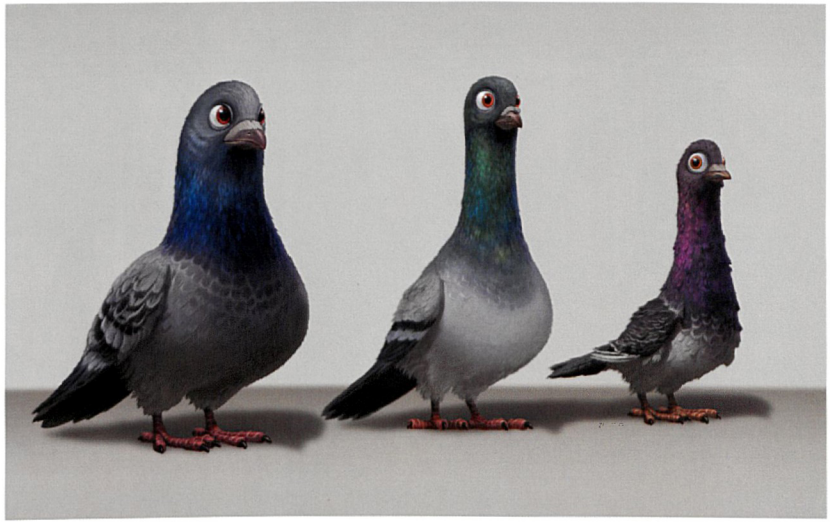
Pigeon Development Art / Jin Kim / graphite



Pigeon Storyboards / Joe Mateo / digital



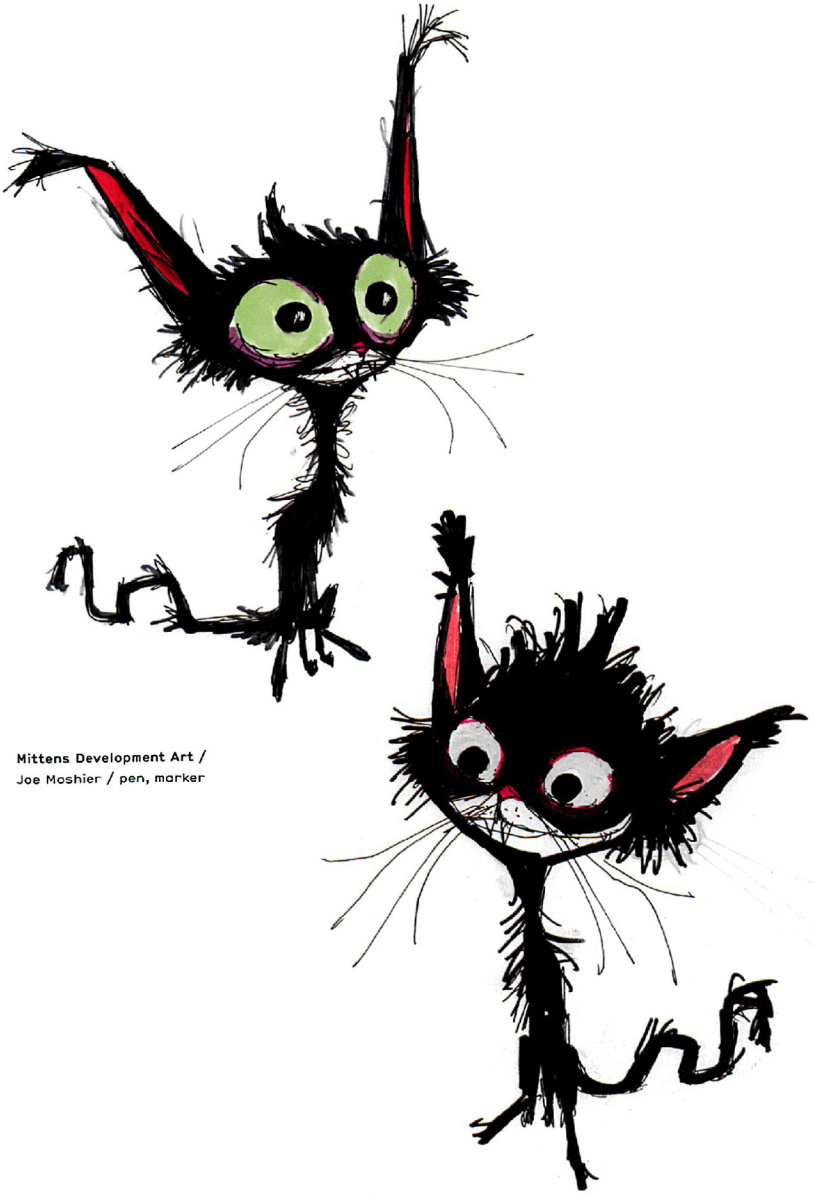
Pigeon Lineup / Jin Kim / graphite, marker



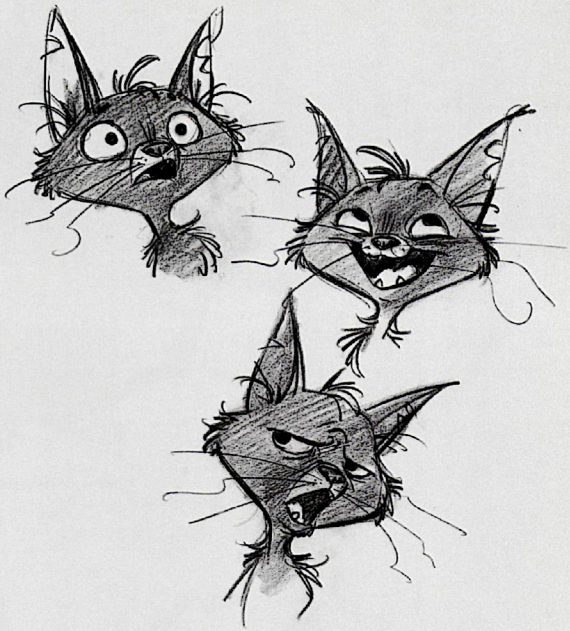
Pigeon Painting / Jim Finn / digital

Mittens Development Art / Chen-Yi Chang / digital

Mittens Development Art / Art department / pen, charcoal pencil



Mittens Development Art / Joe Moshier / pen, marker

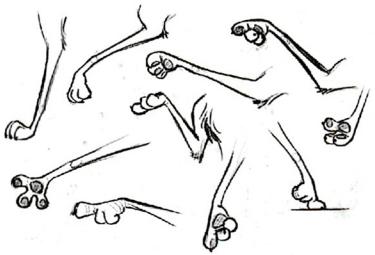


Mittens Facial Expressions / Jin Kim / graphite

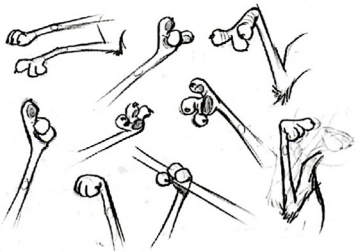
> Memorable, well-designed characters have a strength to them. When you see the character for the first time you know how the character is going to move and act. It was really important that the animators pull from Mittens' story background and her character design to inspire our animation, giving the character truth in her movements.

–LINO DISALVO, *supervising animator*

Mittens Development Art / Chen-Yi Chang / digital



Mittens Paw Poses / Jin Kim / graphite

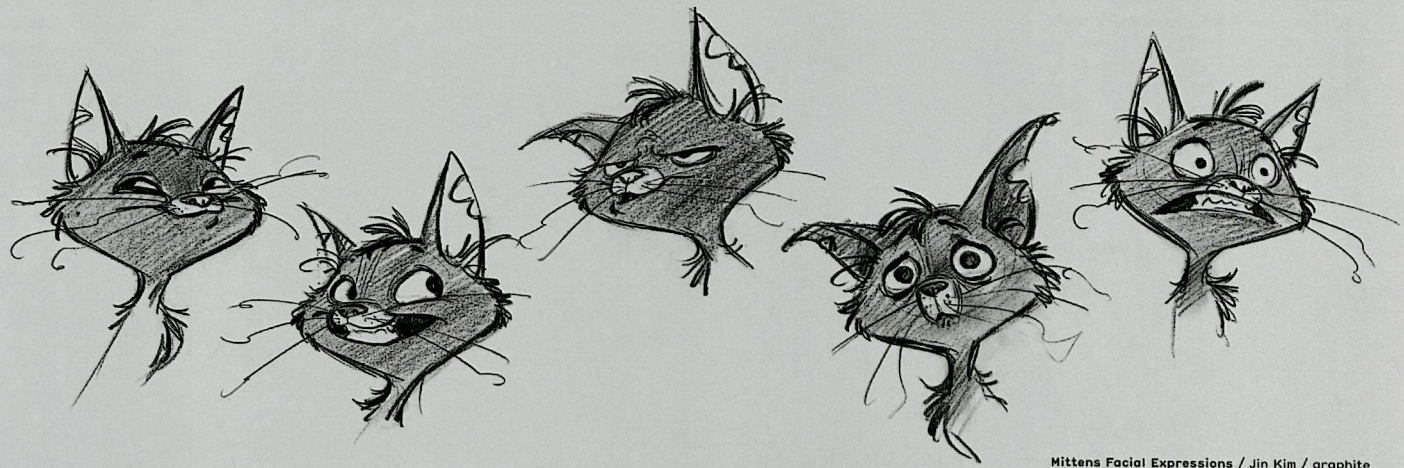


Pail Painting / Paul Felix / digital

"Mittens is a black cat, so obviously there's bad luck there. She's living on the street and is ratty looking, her fur is unkempt. Chen-Yi Chang did the original designs, Jin Kim did exploratory expression and pose drawings, and I did the final tweaks. We began with a skinny, emaciated frame, gave her short pointy ears and big eyes and frazzled fur for empathy. Then the story changed and Chris didn't want her to be too pathetic, so we added some meat to her frame."

–JOE MOSHIER, *lead character designer*

Mittens Development Art / Chen-Yi Chang / digital



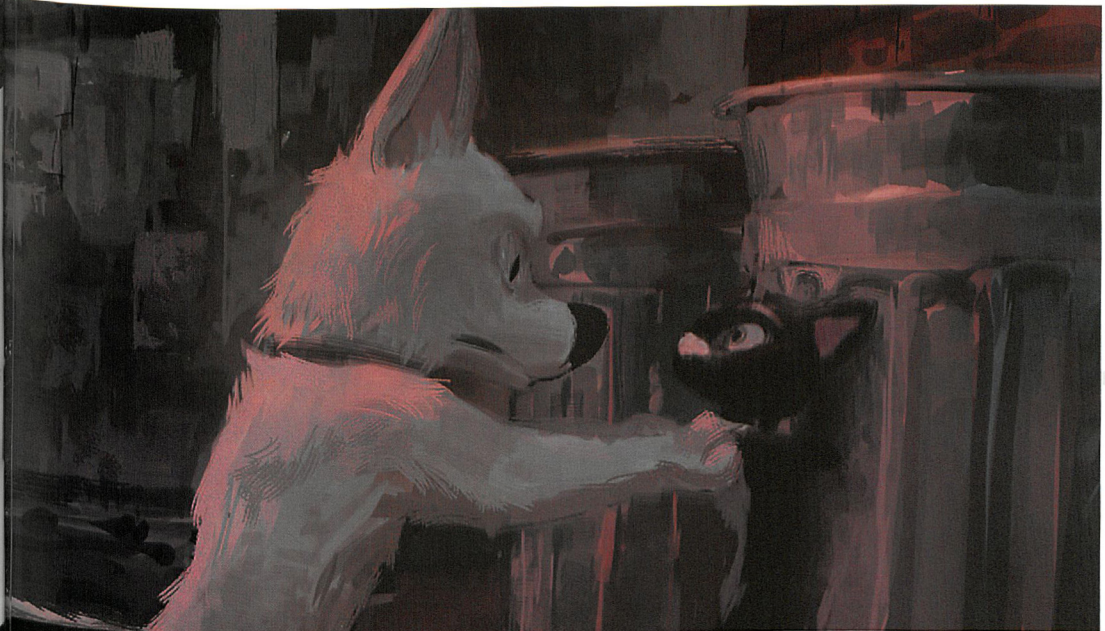
Mittens Facial Expressions / Jin Kim / graphite

Alley Development Painting / Paul Felix / digital

Brownstone Color Key / Paul Felix / digital

Brownstone Development Drawing / Jim Martin / graphite, digital

New York Development Art / Jim Martin / graphite, digital



Alley Color Key / Paul Felix / digital

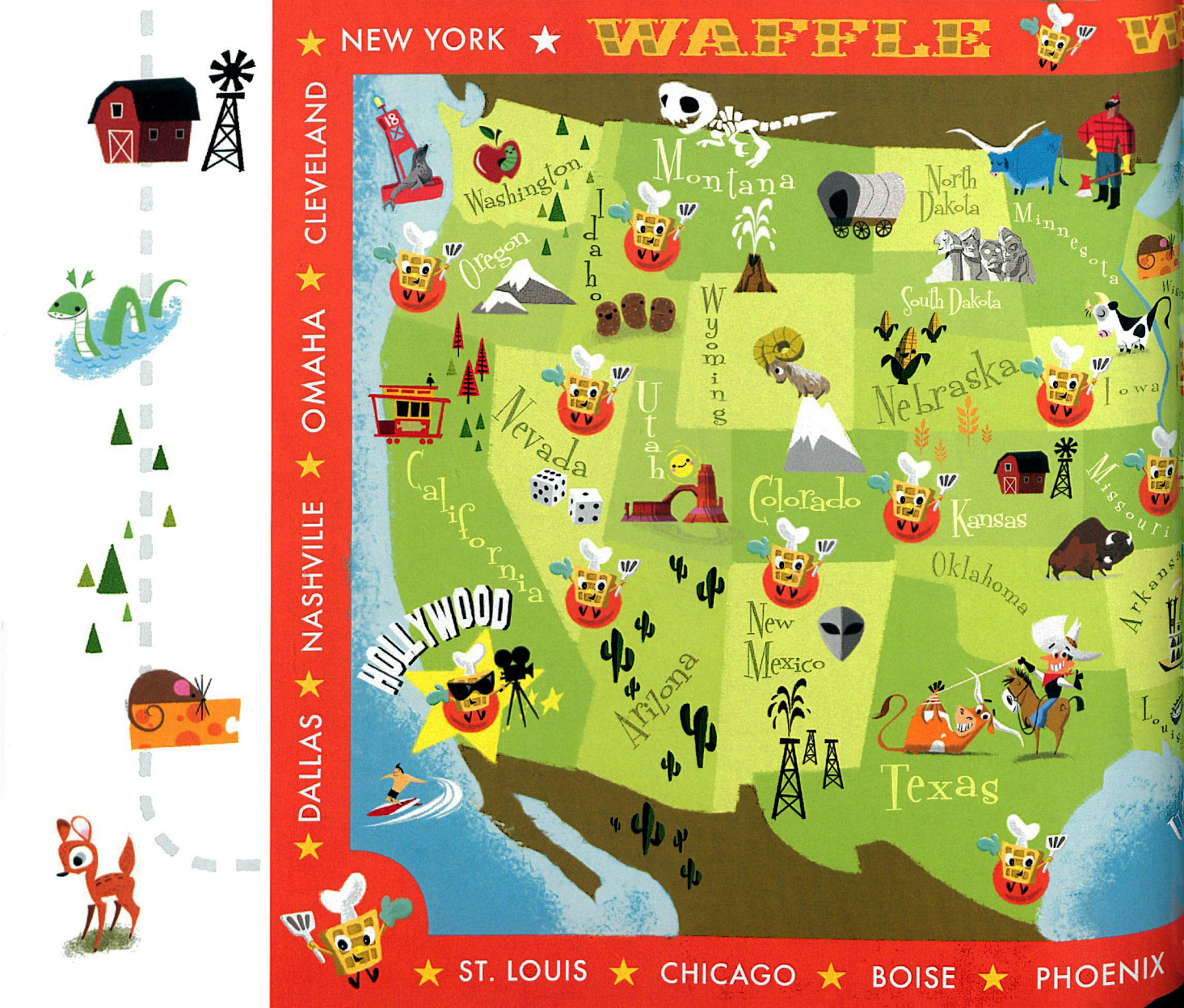
Reverse View of TV Store / Paul Felix / digital

TV Store Painting / Greg Miller / digital

Character Development Painting / Paul Felix / digital

"We wanted to keep the movie from more of an animal's perspective, so when we're in New York we're not focusing on the Empire State Building more than any other building. And we probably wouldn't see the St. Louis Arch or Mount Rushmore in Bolt's travels. Animals don't care about those things. It wasn't about [landmarks], but the real America."

–CHRIS WILLIAMS, *director*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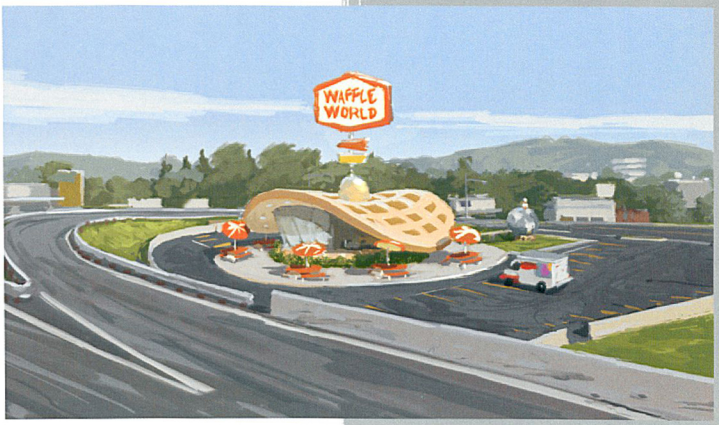
BOISE
PHOENIX

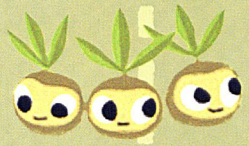
Montage Waffle World Development / Bill Perkins / digital

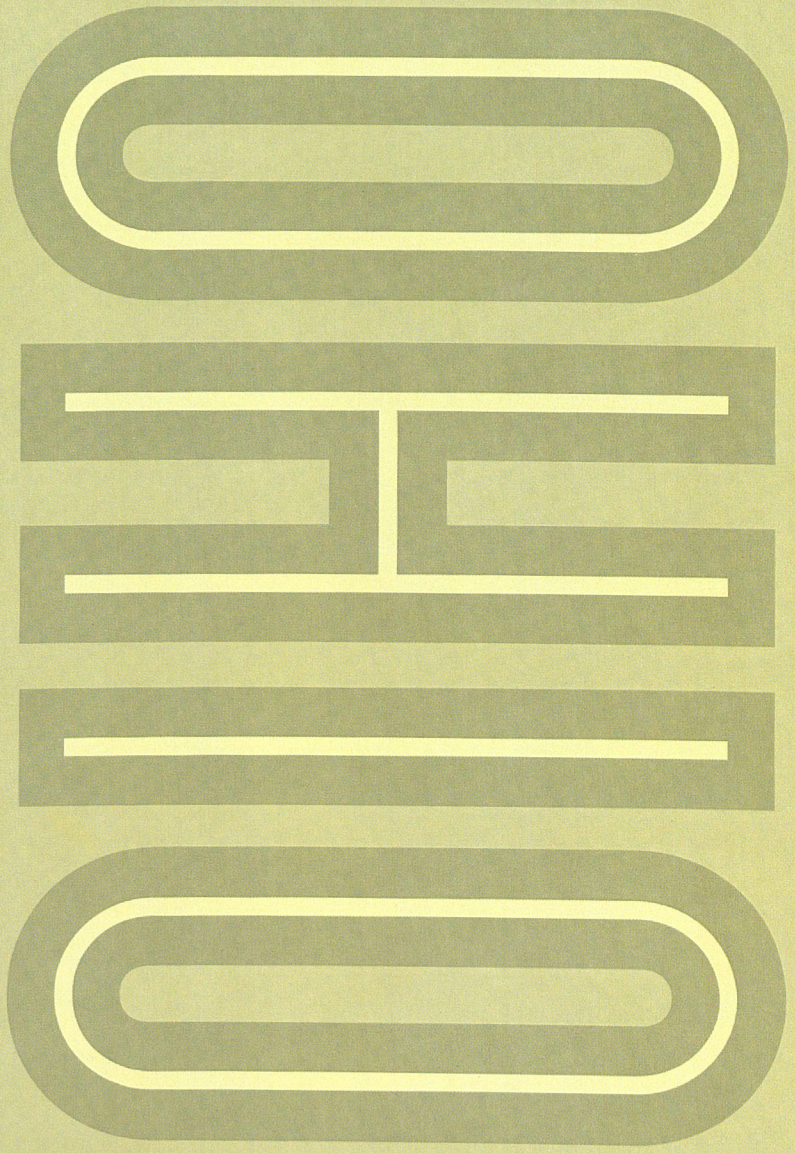


Waffle World Map & Icons / Joe Moshier, Mac George / digital

"The RV park in our film looks like the one we found in Ohio during our summer research trip. It was out in the country, surrounded by beautiful scenery, as opposed to sitting on a flat piece of ground [typical in CG]. On one side was a river and grading in the landscape, where the road dropped down to the river, and into that they'd built the RV park. It felt like a campground, natural and beautiful."

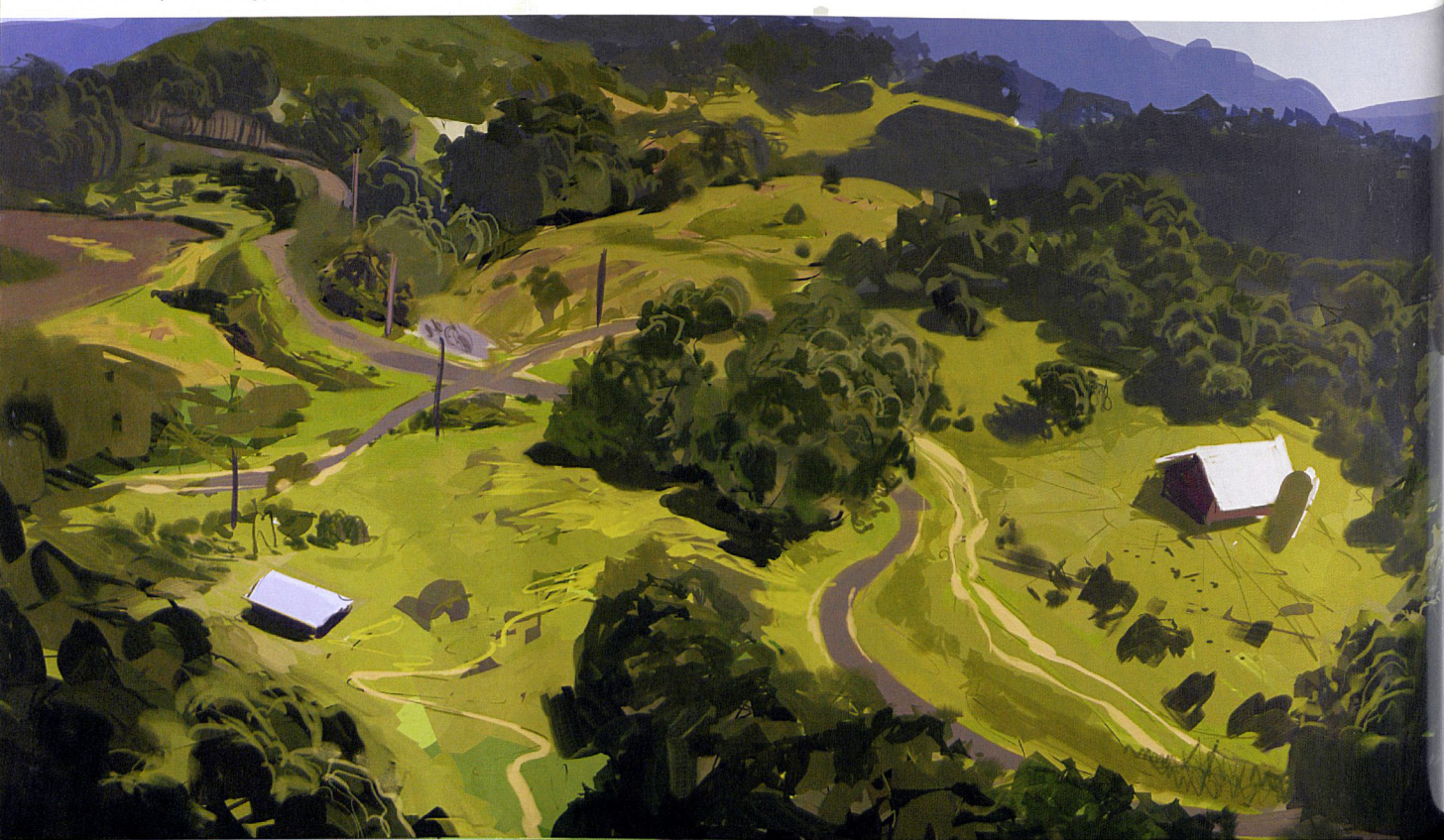
–ADOLPH LUSINSKY, *Look and Lighting director*





RV Park Development Painting / Paul Felix / digital

RV Park Development Painting / Paul Felix / digital



RV Park Painting / Jim Finn / digital

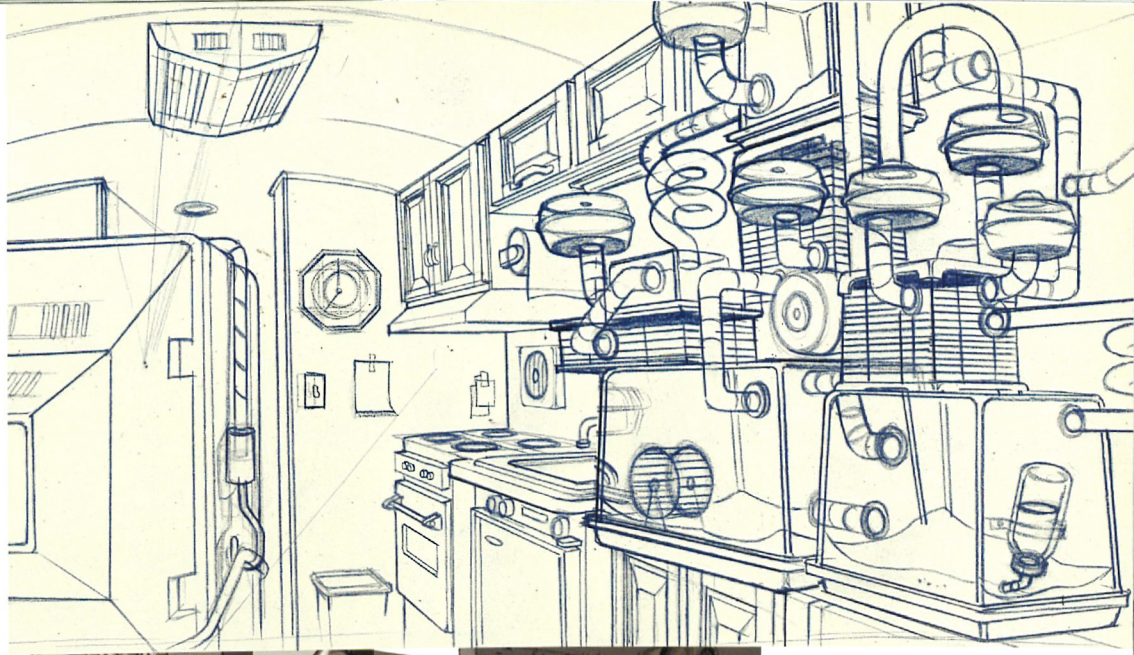
"John Lasseter urged us to pay close attention to the minutiae of the places we went to [on our research trips] and why things looked the way they do, to contrast the two worlds Bolt finds himself in. Recreational vehicles in the East, for example, have canopies that slope at sharper angles because of the frequent rains. Infrastructure is often older in the East, so we documented the look of aged concrete and streaks of bleeding rust. We also tried to capture the overall coolness of color found in places like Ohio, in sharp contrast with the golden Mediterranean light of Southern California."

–PAUL FELIX, *art director*

Rhino's RV Development Painting / Kevin Nelson / digital

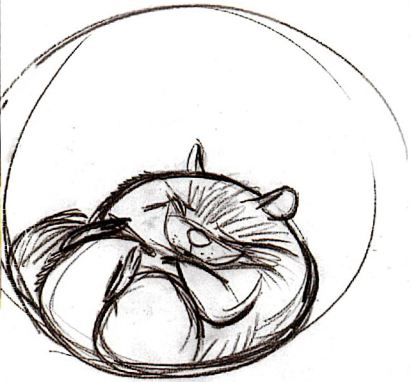
RV Park Layout / Jean Christophe Poulain / digital

Interior RV Exploration /
Mac George / pencil



Interior RV Exploration /
Mac George / graphite, digital

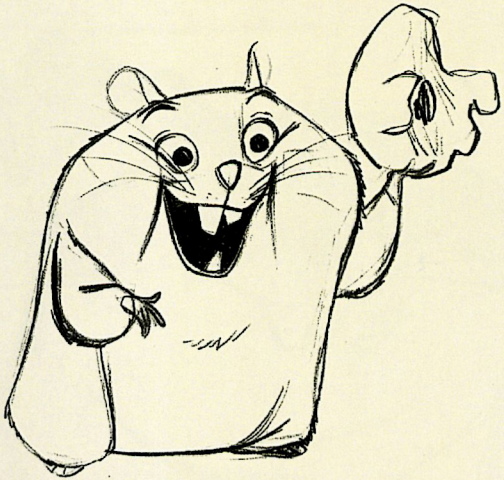
Rhino Development Art / Joe Moshier / graphite, marker



"Rhino's my favorite character in the movie. Physically he's like a furry baked potato, with big eyes and big goofy teeth. He's hyperactive and a geeky fan-boy of Bolt's. Growing up, my favorite character was Baloo the bear from *Jungle Book*. I wanted to go up to him and just hug him. I feel like Rhino has that huggable appeal and, hopefully, people will respond to him. The thing about designing is you can create characters that kids will want to meet at Disneyland or become friends with in their minds. That's exciting to me."

—**JOE MOSHIER,** *lead character designer*

Rhino Facial Development / Joe Moshier / graphite



Rhino Development Drawing / Joe Moshier / graphite

Rhino Character Poses / Jin Kim / graphite

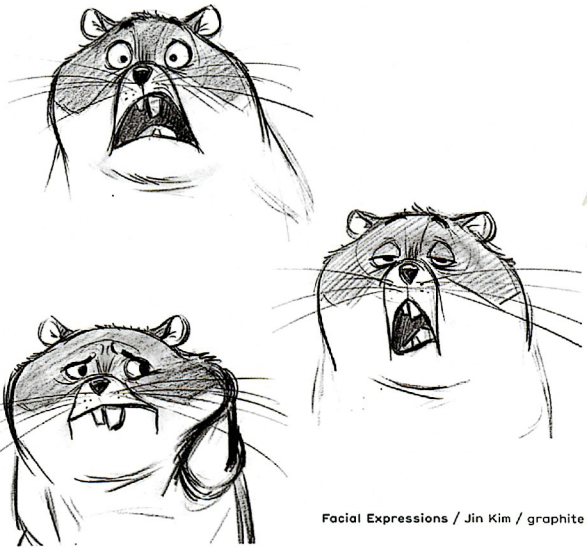
Rhino Facial Expressions / Jin Kim / graphite

"I've been a visual development artist at Disney for 12 years, but I've also done scratch and final voices. When I was asked to do Rhino, this fuzzy puff-ball who rolls around in a plastic ball, I was prepared to do a squeaky, whacky voice. But [the filmmakers] figured I normally come across as very enthusiastic, so I could play that. Rhino is excitable and high-energy, which is pretty much me, and, like Rhino, I'm pretty nerdy about animation and Disney stuff, I have lots of toys and collectibles in my [work space]. Rhino is a slightly more stylized version of me."

—**MARK WALTON,** *voice of Rhino*

Rhino Character Development Drawing / Jin Kim / graphite

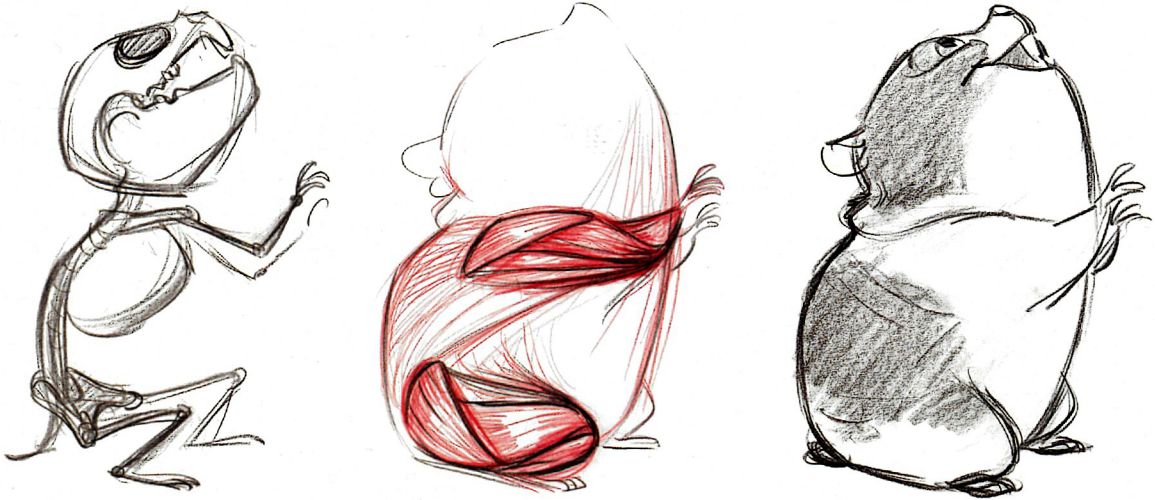
Rhino Development Art / Joe Moshier / graphite, marker



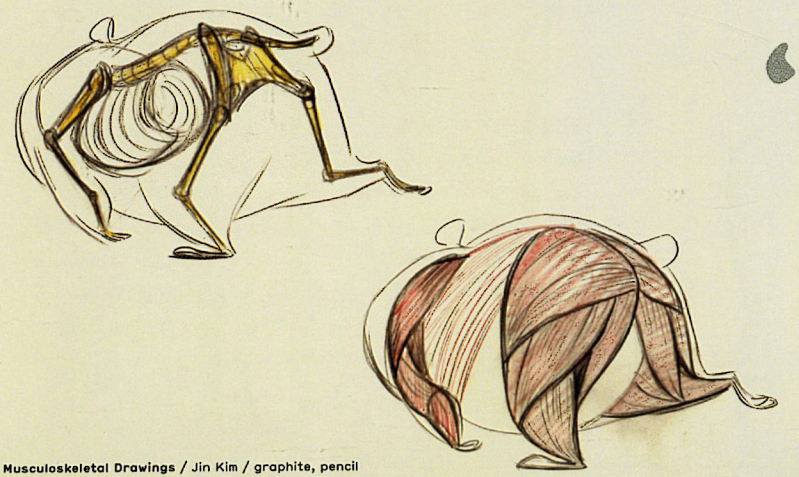
Facial Expressions / Jin Kim / graphite

"With Rhino, I felt a huge responsibility to the artists who had built such a great foundation for the character. The storyboards are hilarious, Joe Moshier's designs are fantastic, and Mark Walton's voice is perfect. Once the rigging and modeling team jumped all the technical hurdles and Rhino got into the hands of the animators, he took on a life of his own. Rhino is one of those rare characters who can seemingly say or do anything, and still feel right. He's an animator's dream come true."

–CLAY KAYTIS, *supervising animator*



Musculoskeletal Drawings / Jin Kim / graphite, pencil



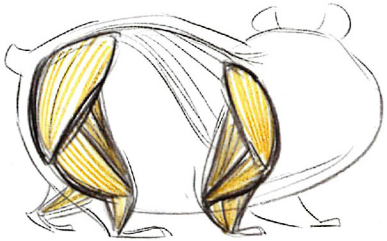
Musculoskeletal Drawings / Jin Kim / graphite, pencil

"I was involved in building character model rigs, which is the skeleton underneath the characters and the way we move them around. Disney's 'Nine Old Men' [a group of leading artists at the studio in Walt's day] pioneered the idea of 'squash and stretch,' that if you squashed and stretched something you got action to read like a flow. We use those principles and apply them no matter what we're doing—on *Bolt* we were trying to do it in a naturalistic way, so our rigs reflected real skeletal mechanics."

–DOUG BENNETT, *animation supervisor*

"Like most of the people here, I come from a 2-D animation background and had assumptions about 3-D. I thought character models were front-loaded to anticipate every single pose and expression—it's not that way at all! Some animators can really work a pose for camera and get a better result than other animators, their scenes sparkle and live. It's not just the model, it's animators who can put thought and detail into a scene and squeeze all the entertainment out of it."

–BYRON HOWARD, *director*



Musculoskeletal Drawings / Jin Kim / graphite, pencil

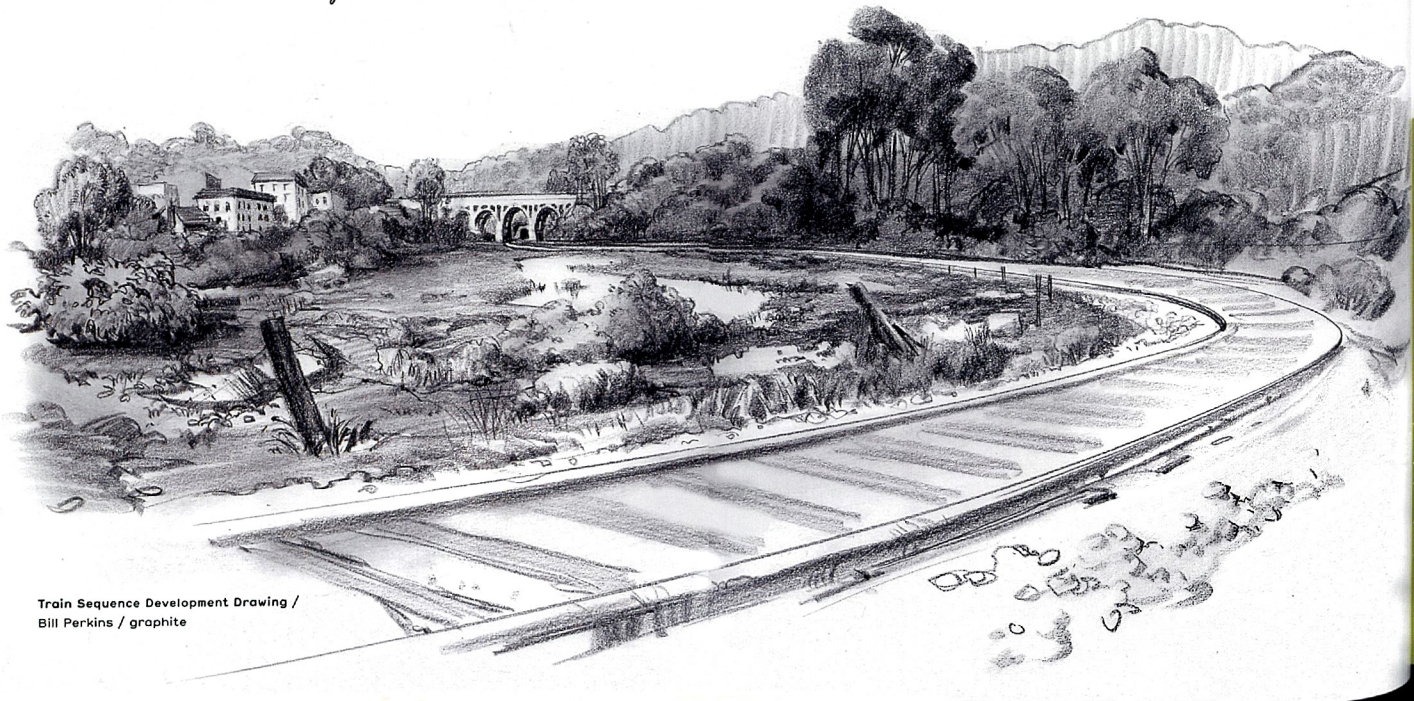
Rhino Render / Kevin Chesnos, Mark Siegel, Jim Finn / digital

"Most of Rhino's world is spent in his ball so figuring out how to control the two together was tricky. For example, when Rhino starts walking, his momentum takes over the ball, but once moving, the ball's momentum takes over Rhino and vice versa. This 'dance' must be carefully planned and it's up to the animator to control both to make a seamless, believable performance as if they are one."

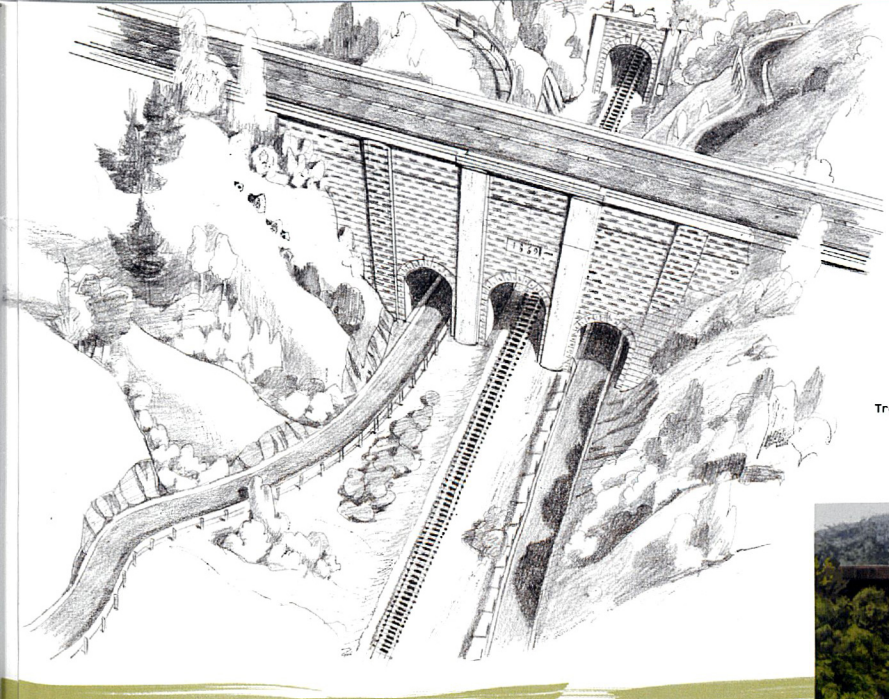
–JASON ANASTAS, *animator*

"The bridge and train sequence was originally in a different section of the movie, before Rhino appeared, and involved only Bolt and Mittens. During the pitch with the other storyboard artists, we came up with the idea that it would be better if Rhino were with them and have two forces pulling Bolt in different directions [about jumping from a bridge onto a speeding train]. Rhino is, 'You can do it!' Mittens is, 'NO!' I then needed a cool way to have them swing up on top of the train. At first, it was going to be a rope, but that didn't make sense—why would a rope be on top of a bridge? Chris and I came up with the idea of a Homecoming banner. I still couldn't find that one element [to make them swing], but then I realized—it's the wind coming out of the tunnel hitting the banner! You have to imagine the surroundings in a scene, all the things that would be around you in that situation."

–JOE MATEO, *storyboard artist*



Train Sequence Development Drawing /
Bill Perkins / graphite



Train Overpass Exploration Drawing / David Womersley / graphite

Train Overpass Painting / Dan Read / digital

Train Sequence Storyboards / Joe Mateo / digital

Train Sequence Development Painting /
Paul Felix / digital

SOUTH

Cat Up A Tree Painting / Jerry Loveland / digital

Cat Up A Tree Development Drawing /
Bill Perkins / graphite

Tree Design / Jerry Loveland, Bill Perkins / digital

Cat Up A Tree Development Painting /
Bill Perkins / digital

Lloyd Character Drawing / Jin Kim / graphite

Gas Station Development Drawings / Bill Perkins / pen, marker

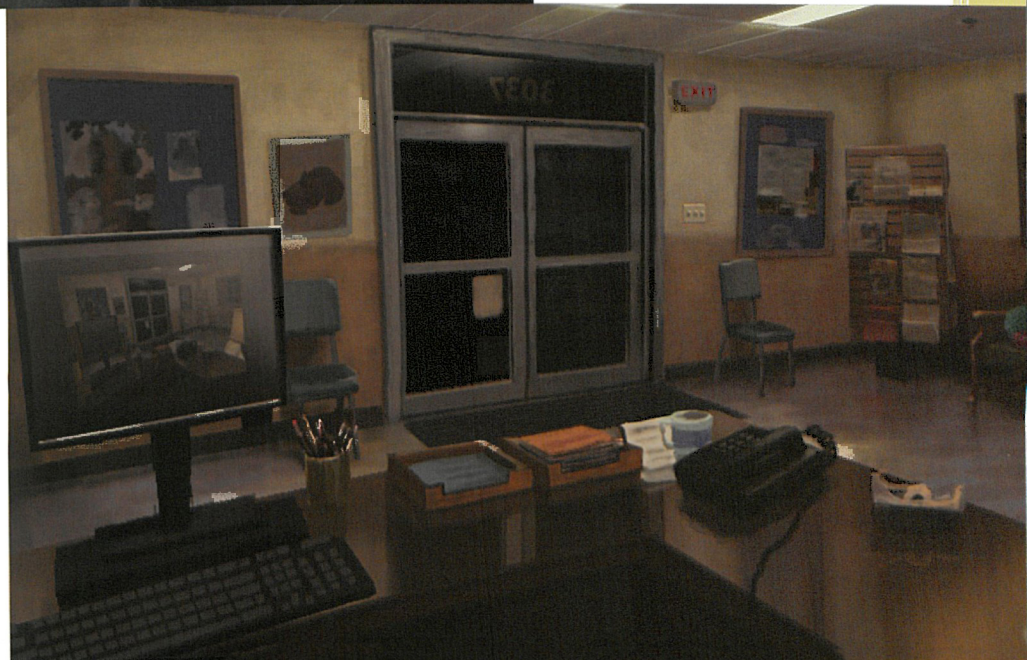
Martin Character Drawing / Jin Kim / graphite

Gas Station Environment Painting / Greg Miller / digital

Animal Control Center Envirionment Painting / Greg Miller / digital

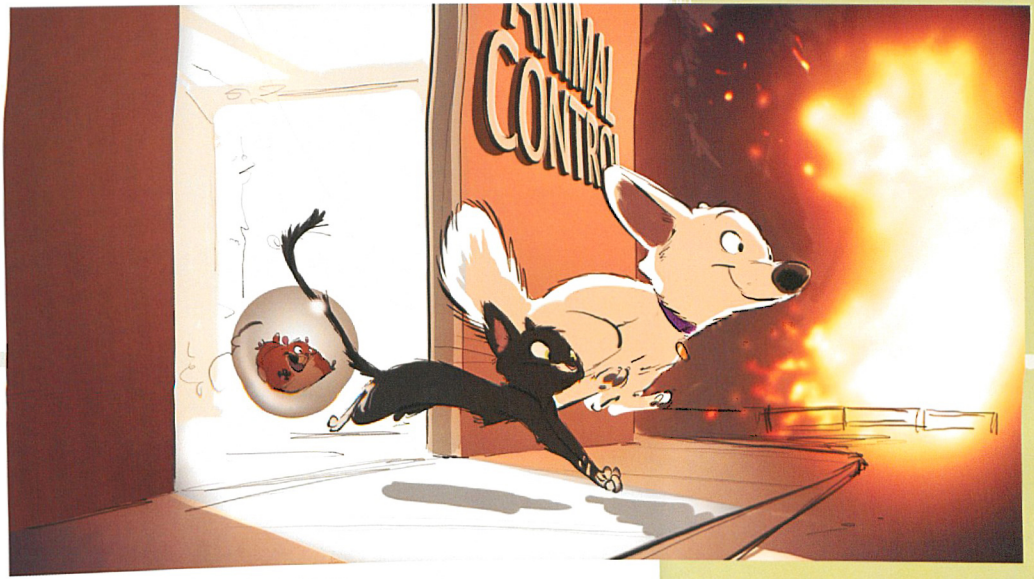
Interior Animal Control Center Environment Painting / Dan Read / digital

Esther Character Drawing / Joe Moshier / graphite



Animal Control Color Key / Paul Felix / digital

Animal Control Color Key / Paul Felix / digital



Escape From Animal Control Development Art / Byron Howard / digital

ANIMAL CONTROL
ROLY-PET
ANIMAL SHELTER

Animal Control Storyboards / Byron Howard / digital

CROSS-COUNTRY MONTAGE

Cross-Country Journey Development Painting / Paul Felix / digital

"This film has a cross-country journey, but that played a lesser role to what was happening between the three main characters. One of the places where we showcased the journey was a montage sequence of beautiful vistas, where we see Bolt experiencing the real world for the first time. We had 85 minutes and it was always a battle between how much of that let's-discover-America aspect could go inside a story about the relationship between a dog, a cat, and a hamster."

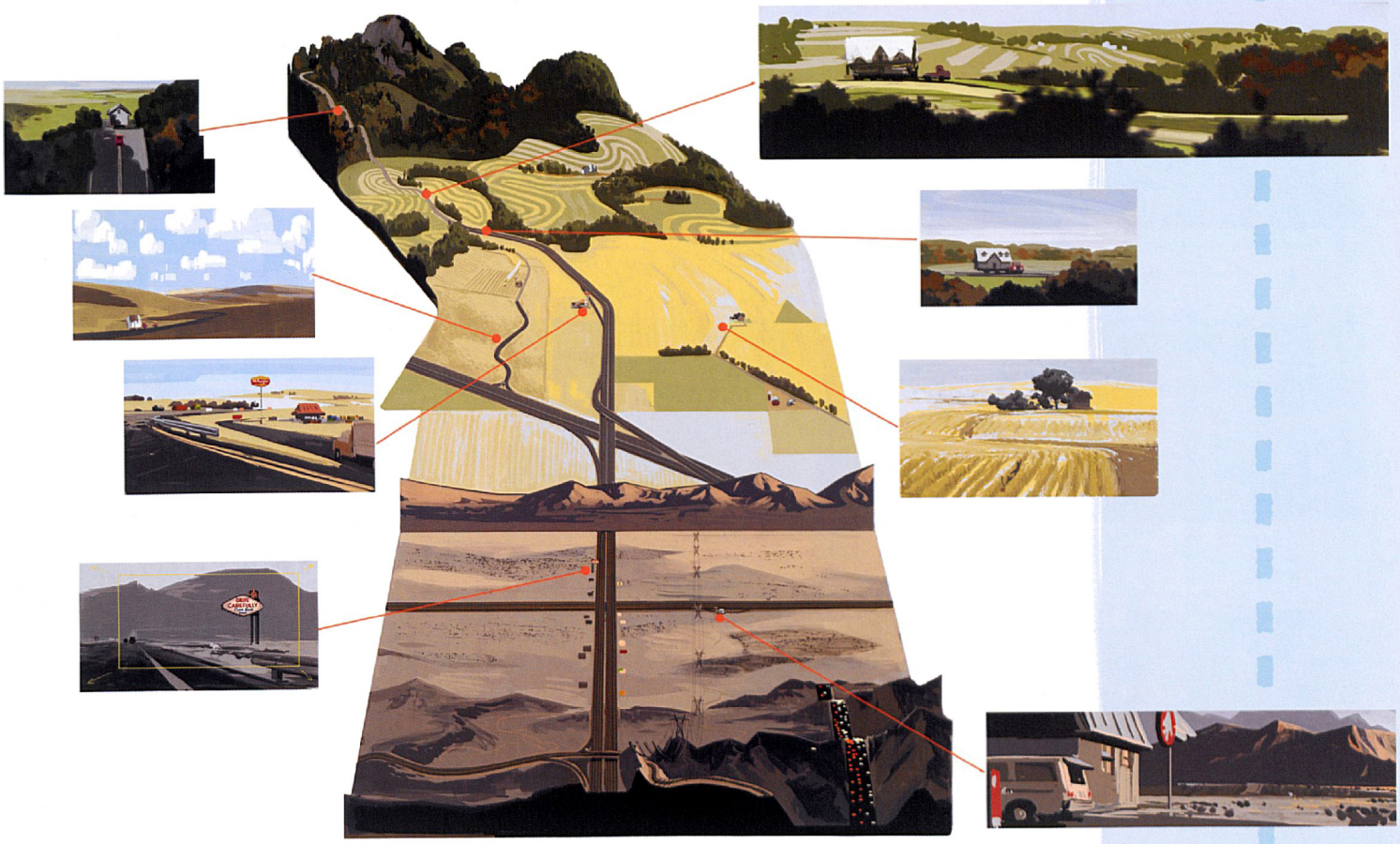
—**CLARK SPENCER**, *producer*

tree shadows move over house as it disappears over the ridge

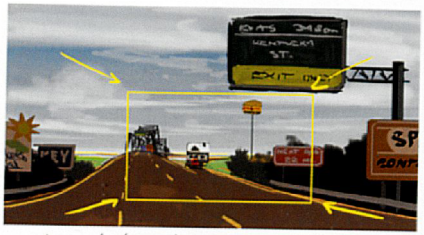
> Anything that works in an animated film is hard earned, but we did receive one gift during the making of *Bolt* and that was the song 'Barking At The Moon' by Jenny Lewis. Byron and I met with Jenny in our story room and talked to her about the film and what the song was about in very general terms. She listened politely and promptly went home to write us the perfect song.
>
> **–CHRIS WILLIAMS,** *director*

start framing Bolt, then allow him to truck away from us until we see the entire fridge

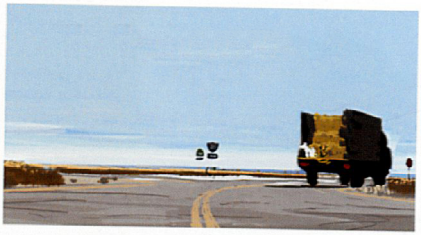
Cross-Country Journey Development Thumbnails / Kevin Nelson / digital



Cross-Country Journey Environments / Kevin Nelson / digital

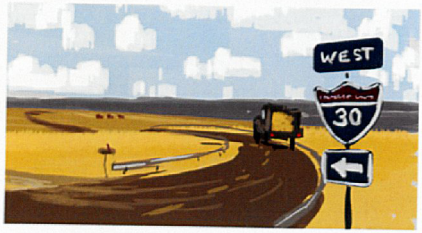


- House trucks past signs
Cheese + Thank you revealed as we truck in



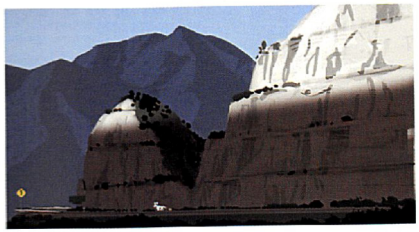
at abandoned farm, a cropdusted passes them

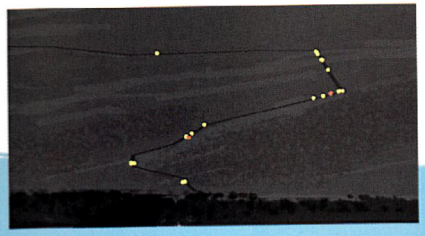
Pat + friends approach the farm where the farmer is playing ball w/ his dog



house seems similar to the clouds above

begin change of scenery to Las Vegas Desert





Cross-Country Journey Development Thumbnails / Kevin Nelson / digital

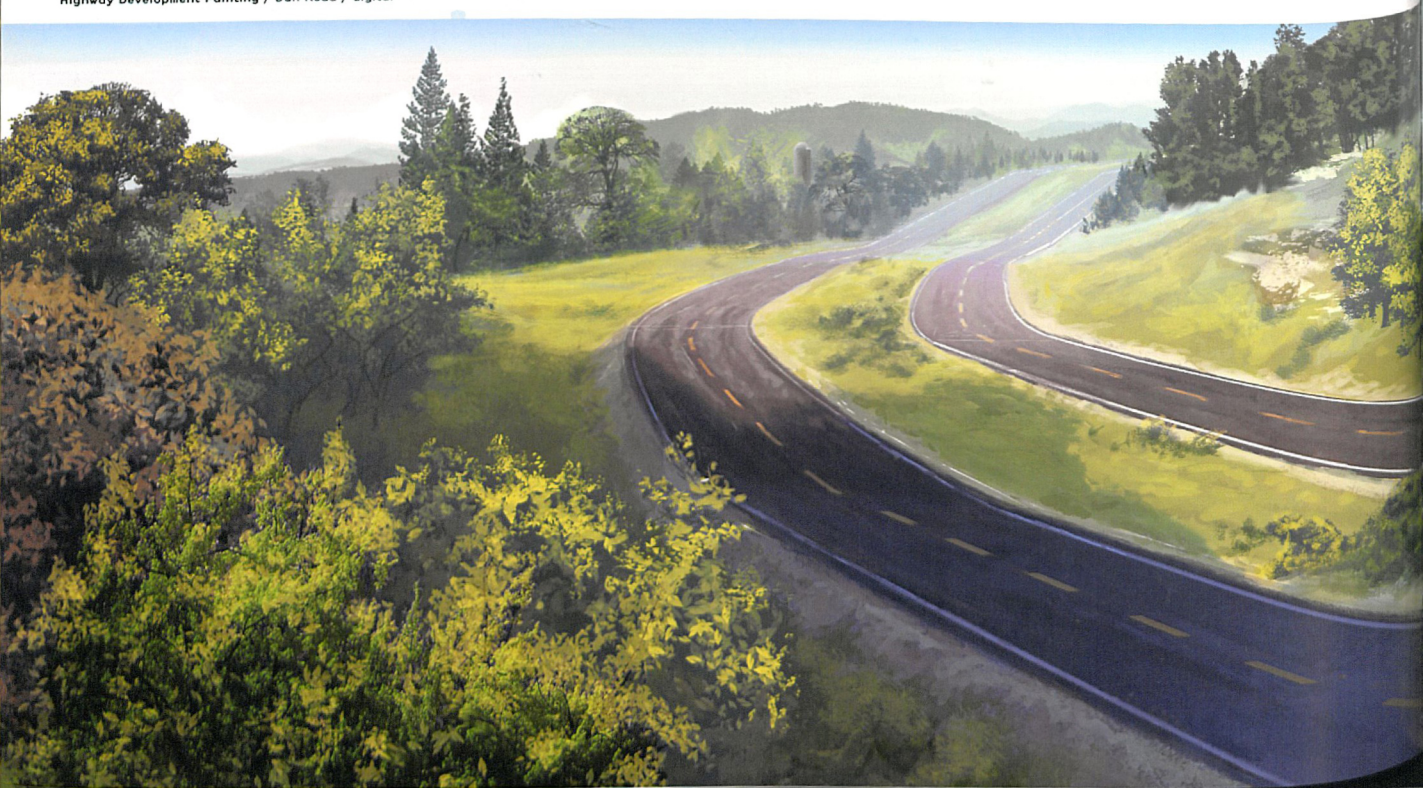
Highway Development Painting / Sean Samuels / digital

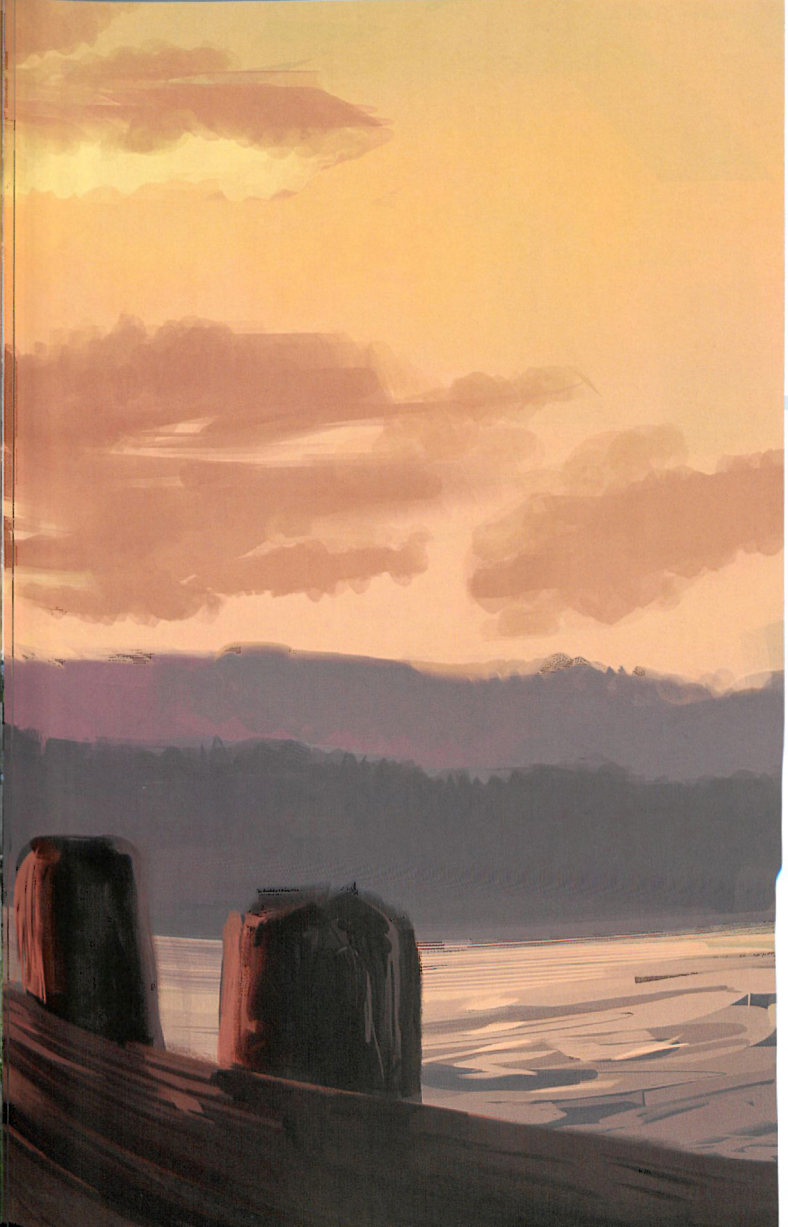
Highway Development Painting / Sean Samuels / digital

Country Road Development Painting / Greg Miller / digital

> Both lyrically and musically Barking At The Moon gave the movie exactly what it needed and expressed beautifully what our main character was going through. Jenny's lyrics brought focus and at the same time helped to expand on the thematic idea of home by offering fresh insight.
>
> **–CHRIS WILLIAMS,** *director*

Highway Development Painting / Dan Read / digital



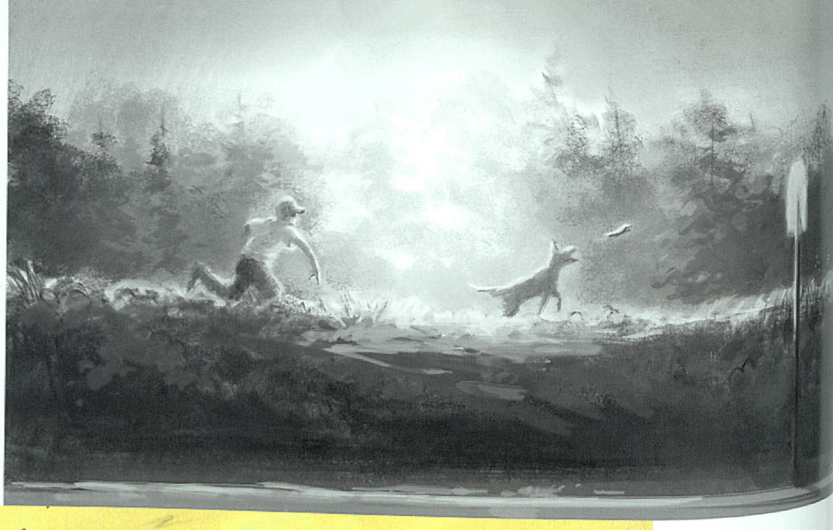


"This film deals with what's real and what's fake. Bolt gets out of his glossy, high-tech TV world of computers, missiles, and explosions, and into the real world of fields and valleys and aged buildings and cracked sidewalks with weeds growing through. In these surroundings, you see a character that's been in this little plastic bubble his whole life start to wake up. And *that's what we needed from Paul [Felix] and his team.* They softened the edges of things with strokes of paint, to get a worn, accessible, lived-in world."

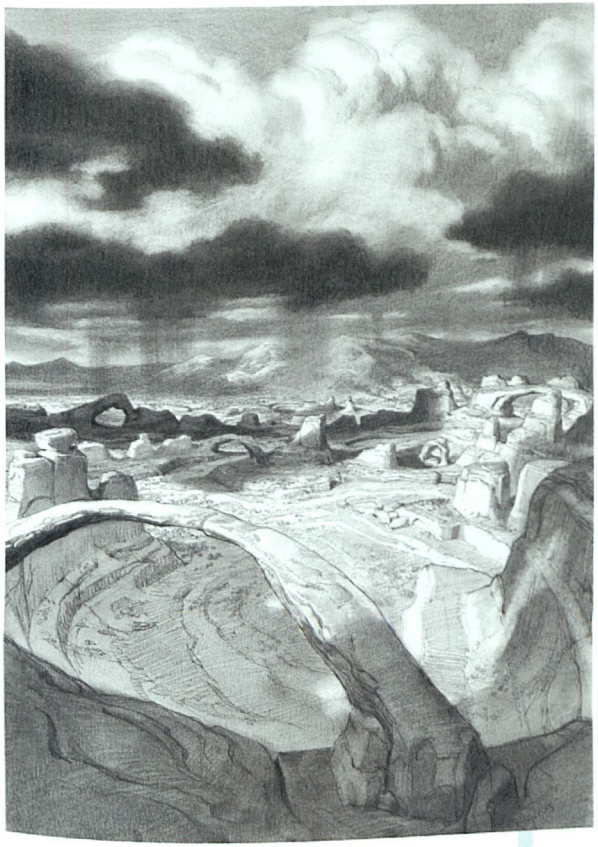
–BYRON HOWARD, *director*

Journey Development Painting / Paul Felix / digital

Journey Location Development Drawing /
Bill Perkins / graphite, digital



Train Station Development Drawing / Bill Perkins / pen, marker on Post-it



Arches National Park Development Drawing / Bill Perkins / graphite, digital

Statue Development Drawing / Bill Perkins / pen, marker

Pickup Truck Painting / Dan Read / digital

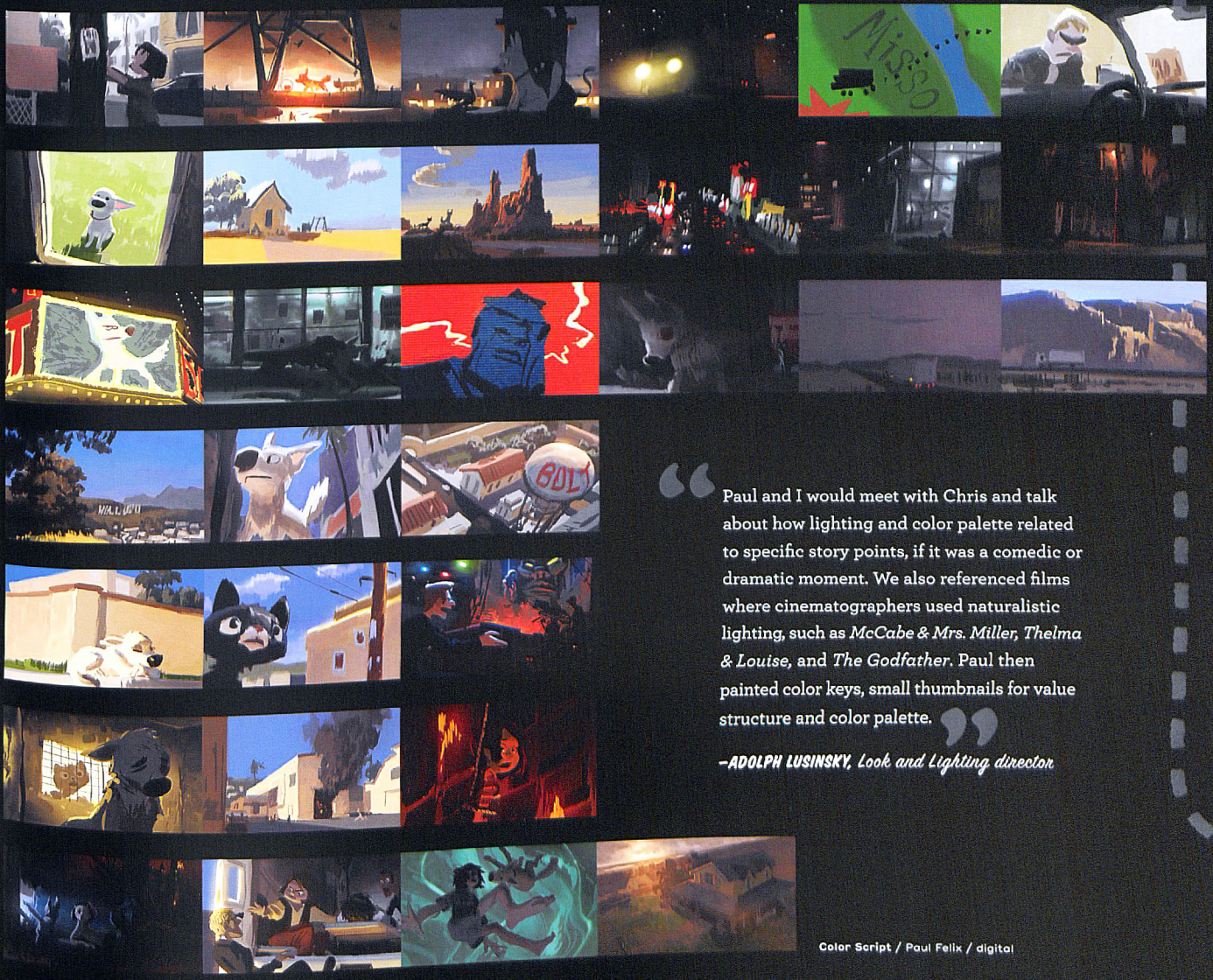
Shed Painting /
Dan Read / digital

> This is a road film and there was an aesthetic interest in the 'every day' represented by classic Americana painters, the objects of aesthetic significance and the built environment of the country—old weathered barns, bridges, smokestacks, telephone wires. There was also tension between the hand-painted world, with a nod to the feel of oil brushstrokes, and one that looked photographed and borrows heavily from the look of live-action cinematography, with effects like lens reflections and exposure choices that feel like they would naturally happen with a camera. The tension on *Bolt*, to me, is the simultaneous read of something that looks like a painting, but also like it was photographed. It's a balance that makes for a unique look and an important part of the art direction because it can lean toward realism—the TV show—and back to a more overtly painted feel for the road trip.
>
> **–PAUL FELIX,** *art director*

Farm House Painting / Dan Read / digital

Abandoned Factory Development Painting / Paul Felix / digital

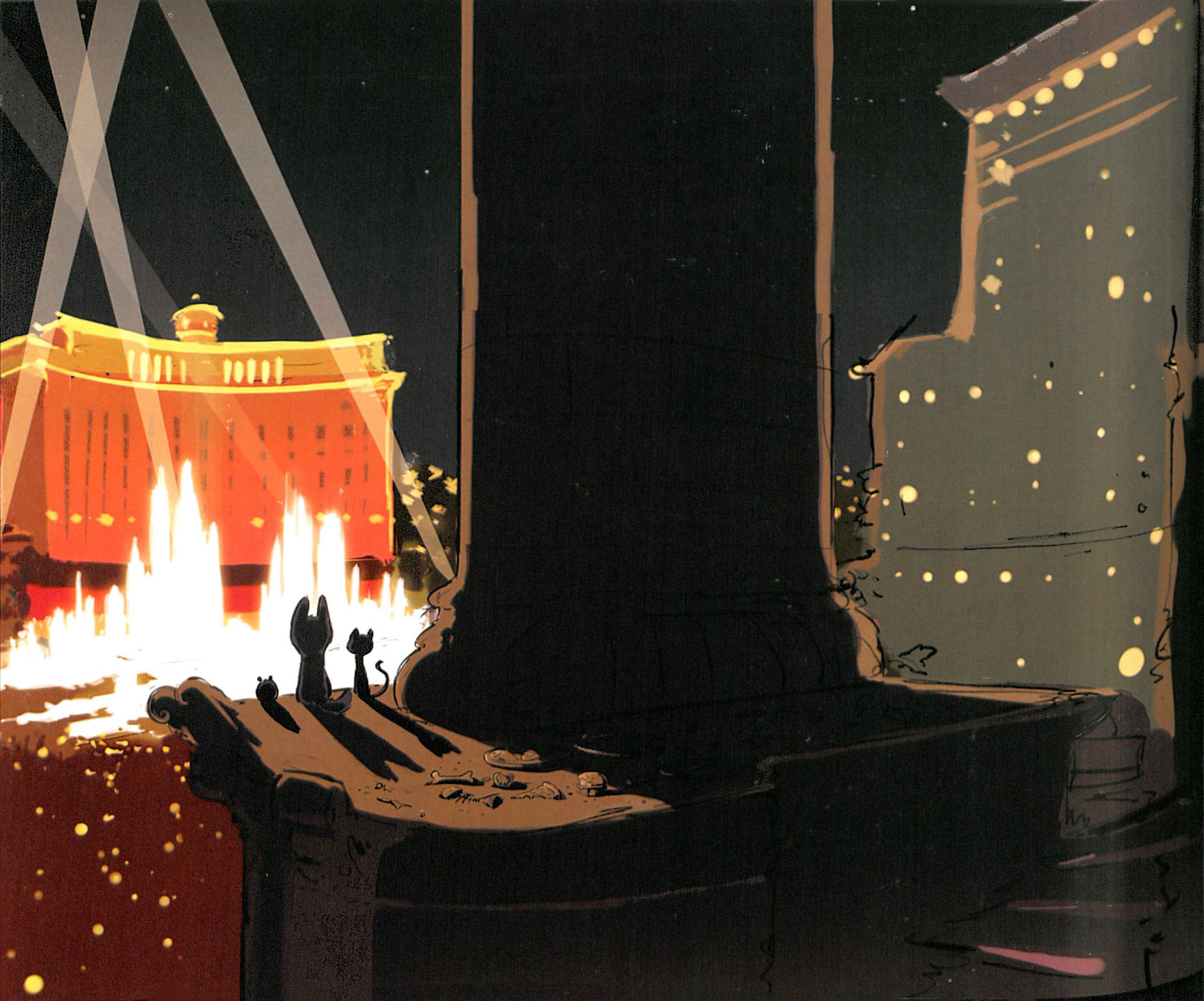
Barn Painting / Dan Read / digital

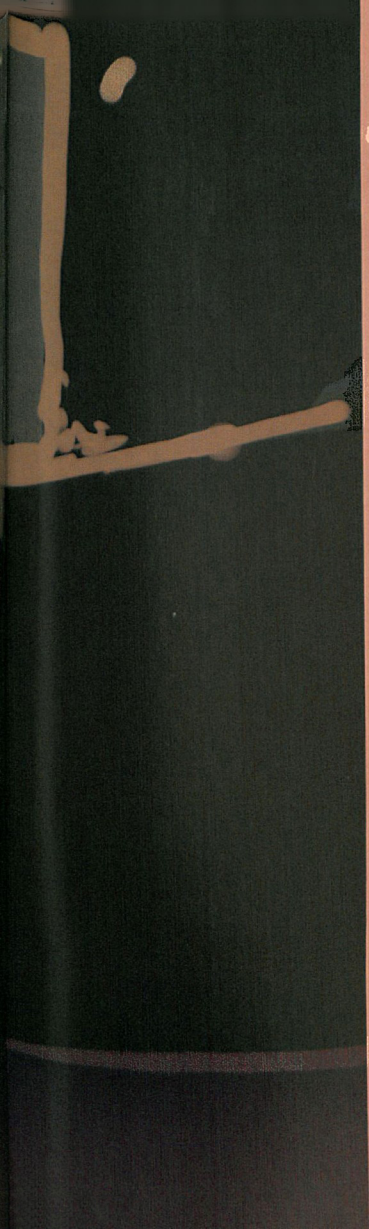


"Paul and I would meet with Chris and talk about how lighting and color palette related to specific story points, if it was a comedic or dramatic moment. We also referenced films where cinematographers used naturalistic lighting, such as *McCabe & Mrs. Miller, Thelma & Louise,* and *The Godfather*. Paul then painted color keys, small thumbnails for value structure and color palette."

–ADOLPH LUSINSKY, *Look and Lighting director*

Color Script / Paul Felix / digital





Vegas Water Show Development Drawing / Byron Howard / digital

"The reason we went to Las Vegas was our main characters face the issue of what's real and what's fake, so what better place to show that than in one of the most fake places in America! Vegas is a fantasy world, at night especially. But in the morning things look a lot different—reality hits you in the morning."

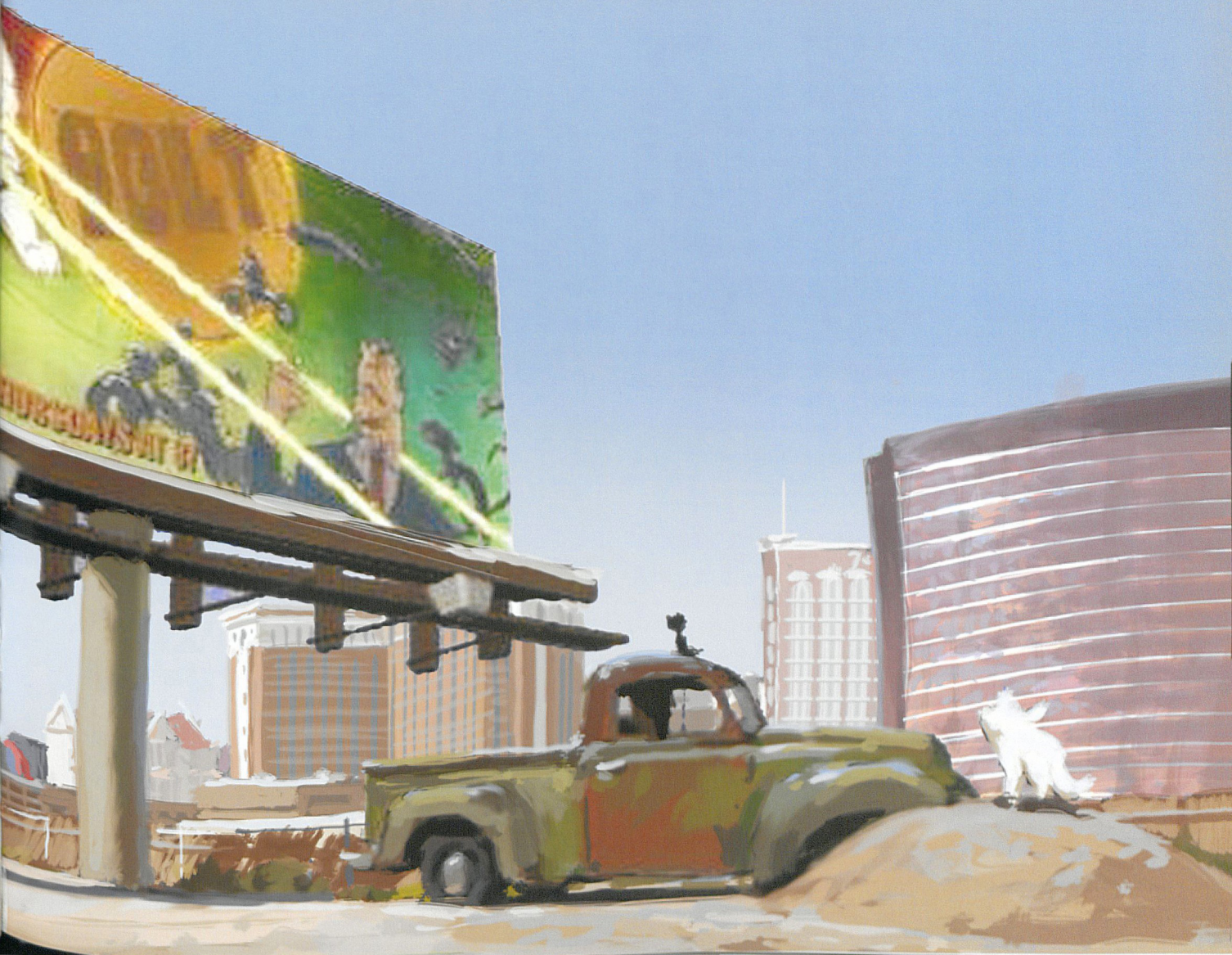
–NATHAN GRENO, *story artist*

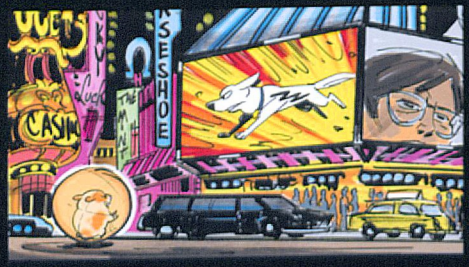
LAS VEGAS

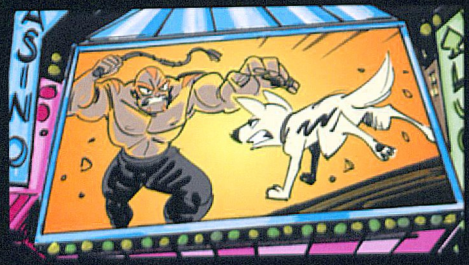
"There were a number of environments we didn't have to realize [in 3-D], because if you're focused on the main characters and a few other pieces to support them, even something like the Las Vegas Strip could be done as a matte painting."

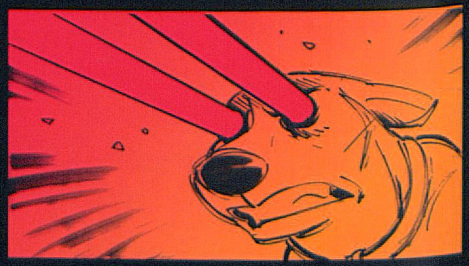
–SEAN JENKINS, *Look Development supervisor*

Las Vegas Development Painting / Bill Perkins / digital









"In a previous version of the story, Bolt holds so tenaciously to the notion he's a super-dog, that something in the real world was needed to knock that out of him—and that was going to be the dog fight in Vegas. But in the new version, where by the time they get to Vegas he's convinced he has no super-powers, that wasn't needed. What Bolt is holding on to is that little girl who for all those years loved him, although deep down he is having doubts about that, as well."

—**BYRON HOWARD**, *director*

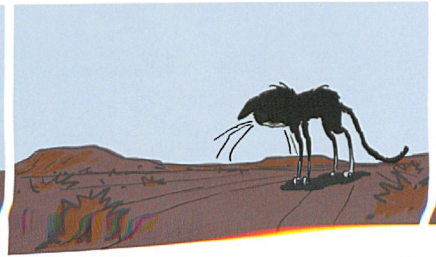
> At screenings people talked about the dog fight in Vegas: 'Man, that scene is great!' So, then, can you destroy those things? The tough thing is to look at a scene in isolation and say it's great, but the movie would be better off without it. That's gut-check time, to take something that works really well and throw it away.
>
> **–CHRIS WILLIAMS,** *director*

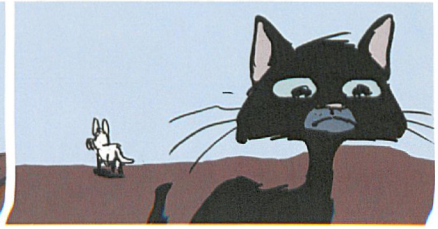
Dog Fight Storyboards / Nathan Greno / digital

Vegas Shelter Painting / Jim Martin / digital

"Bolt has realized he doesn't have super-powers, there's no Green-Eyed Man [as he refers to Dr. Calico], he's accepted his past is a lie—but he still believes in Penny's love for him. Mittens doesn't trust people and can't understand why Bolt, after learning the truth about his past, still believes in Penny. She's surprised him with two little houses she's crudely built, there's tons of free food, they have everything they need. But Bolt still needs Penny. Mittens feels rejected and calls Bolt an idiot for believing in Penny. Bolt, upset, leaves Vegas without her to head back to Penny."

—**NATHAN GRENO,** *story artist*



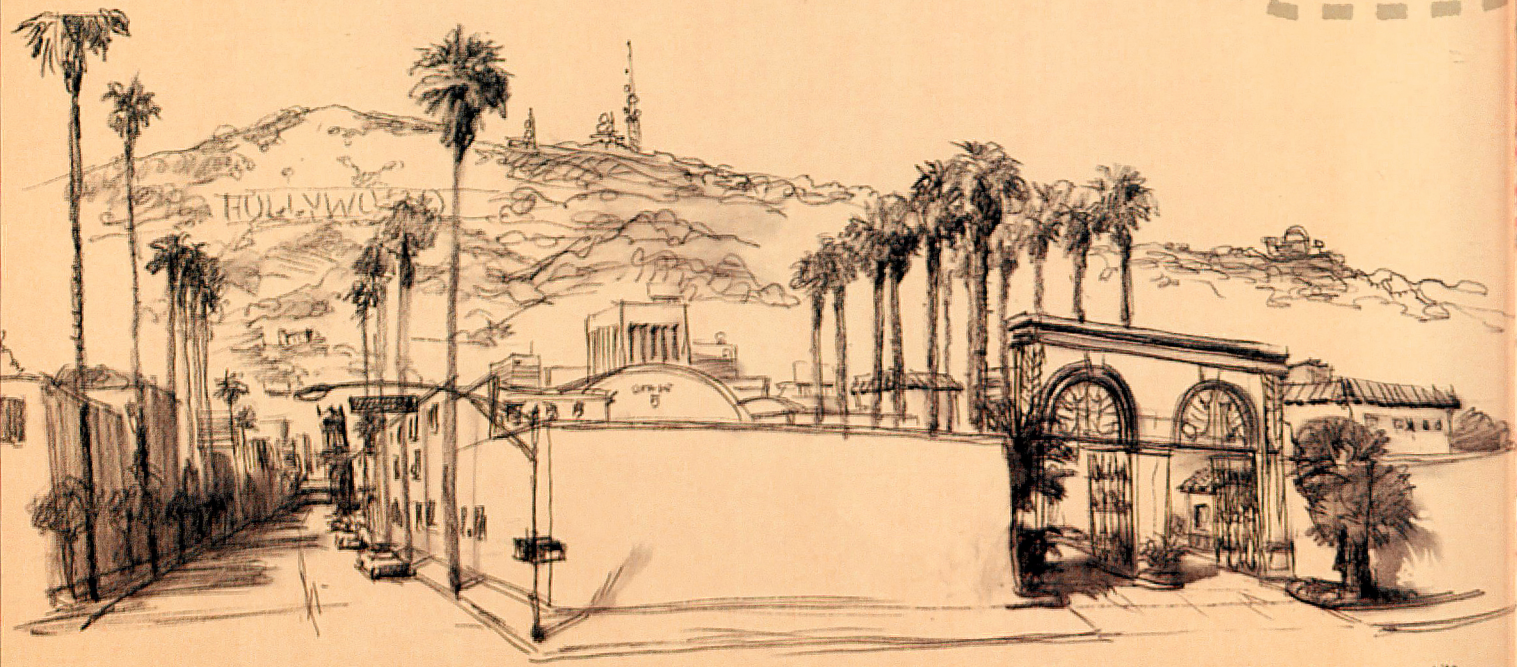


Vegas Storyboards / Chris Ure, Steve Anderson / digital

Vegas Alley Development Painting / Paul Felix / digital

"A fundamental idea of this film was this girl and dog have been put into a Hollywood world that probably isn't right for them. But how do you realize innocence is being lost without having Penny surrounded by 'evil' people? John Lasseter pushed us toward believability and it wasn't believable to say everyone in Hollywood is evil. We had to have a moment at the end where Penny and her mom choose not to be part of that world anymore and they all end up on a farm together. So, for us, it was a delicate balance in playing the Director and Agent so they weren't so clearly evil you'd wonder why her mother or someone else hadn't pulled Penny out of that situation, but still express that this wasn't the best place for a little girl."

–CLARK SPENCER, *producer*



Ext. Studio Lot Development Drawing / Bill Perkins / graphite

HOLLYWOOD and HOME

"I studied sharks when I was developing Penny's agent. Human eyes sit forward on the face so I slightly rotated his eyes back to give him a more shark-like quality. I wanted to communicate visually that you shouldn't trust this guy."

–JOE MOSHIER, lead character designer

Agent Character Design / Byron Howard / digital

Agent Character Development Art / Joe Moshier / pen, marker

Penny's Mom Facial Expressions / Jin Kim / graphite

Penny's Mom Character Painting / Kelly McGraw / digital

Penny's Mom & Agent Storyboards / Joe Mateo / digital

Studio Lot Entrance Painting / Bill Perkins / digital

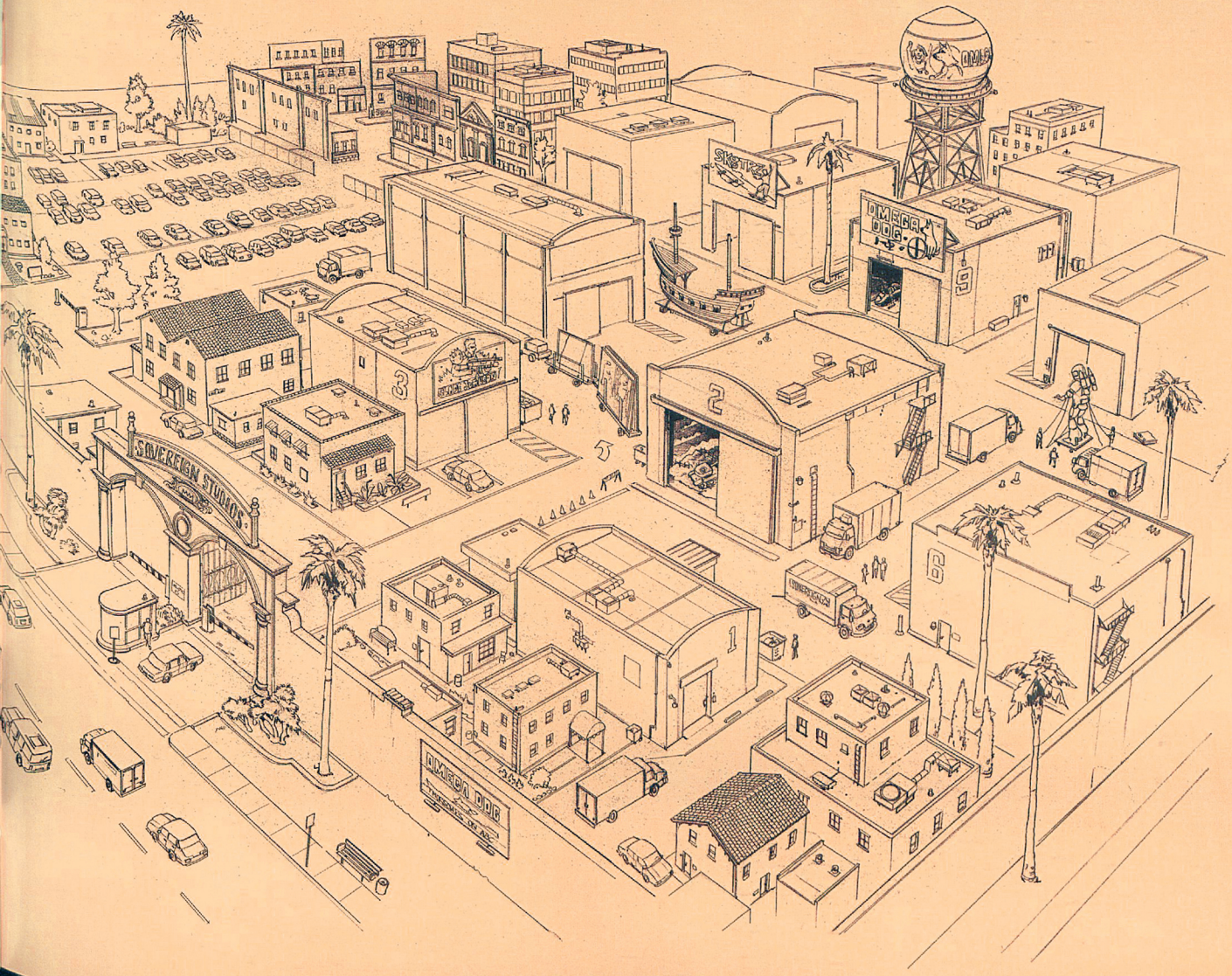
> We know we're all evil in Hollywood [laughs]. Actually, those of us in animation don't really see ourselves as being in the entertainment biz—we'll never be in *Star* magazine. But Hollywood does make fun of itself because there are a lot of bloated egos and money and fame in this town. You look at some high-profile directors and producers and think, 'You really are happy with yourself, aren't you?' So Hollywood deserves a little bit [of satirical ribbing].
>
> **–CHRIS WILLIAMS,** *director*

Hollywood Exploratory Drawing / Bill Perkins / graphite, pencil

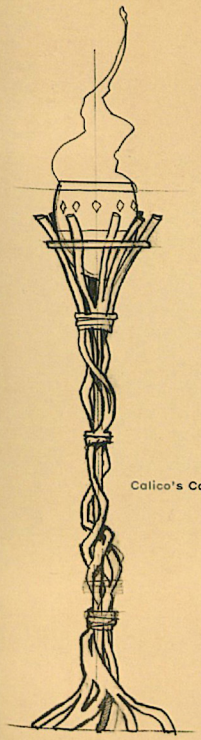
/ Bill Perkins / gns / grar, ıcil

Studio Lot Development Drawing / Bill Perkins / graphite, digital

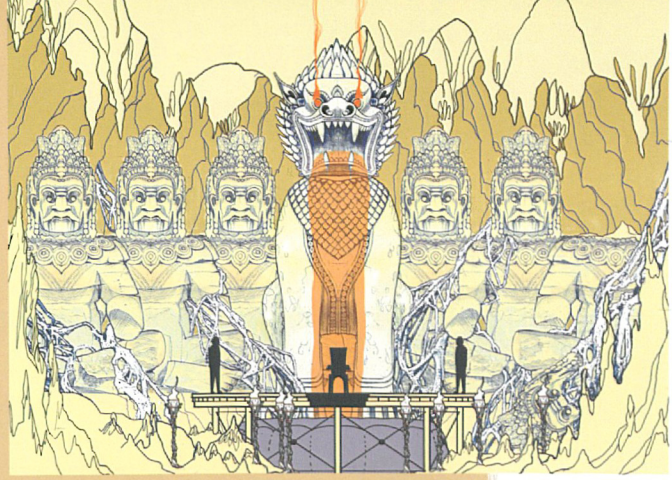
Studio Lot Layout Development / Jim Martin / graphite



Calico's Cavern Environment Painting / Jerry Loveland / digital

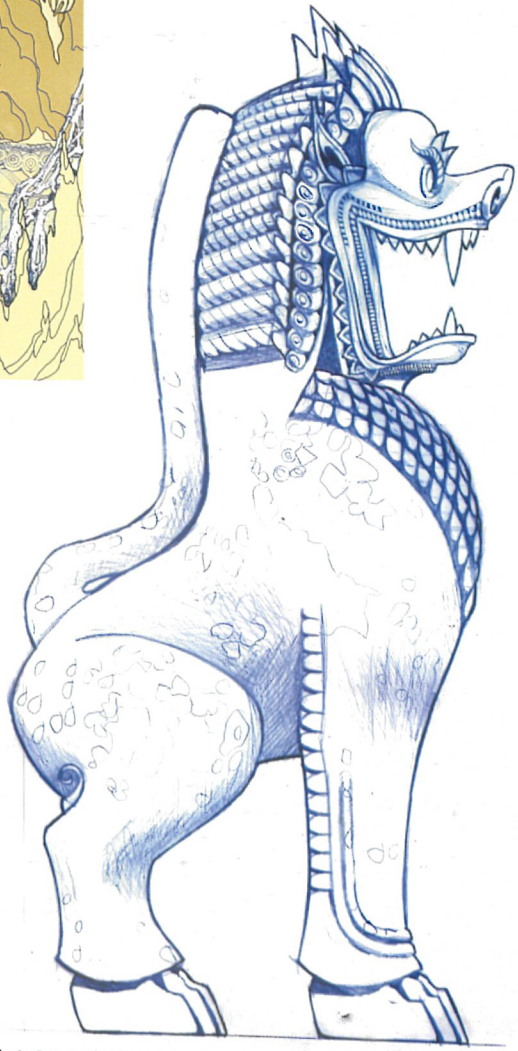


Calico's Cavern Torch Drawing / David Womersley / graphite



Calico's Cavern Elevation / David Womersley / pencil, digital

Calico's Cavern Guardian Painting / Jerry Loveland / digital



Calico's Cavern Lion Statue Drawing / David Womersley / pencil

Burning Soundstage Development Painting / Paul Felix / digital

"Paul painted an image representing the full expanse of what the final image in the film would look like as the soundstage is engulfed in flames, with all the lighting interaction and the effect of smoke and fire. We looked at that artwork for strong inspiration and direction for final expectations to hit as a goal."

–DALE MAYEDA, *effects supervisor*

Fire Effects Crew

"The flames are the threat, but as the fire overtakes the set, the smoke begins building. The smoke is light as the fire begins, but as more hazardous material catches fire, a thick, black smoke forms at the ceiling and progressively makes it disorienting for the characters and [threatens to] suffocate Bolt and Penny as this heavy smoke descends."

–DALE MAYEDA, *effects supervisor*

Soundstage Fire Development Painting / Paul Felix / digital

"In the first version of the story, the fire sequence was staged dynamically, like the TV show. Bolt didn't have super-powers, but acted like a super-dog—jumping great distances, for example—as he saved Penny. But that approach pulled you out of the story. We decided to make it more like how a dog might actually save someone, and stage the sequence realistically to feel the element of danger, that they could die. Eventually Bolt drags Penny close to the vent; the vent is how we made it believable that they survive."

—JOE MATEO, storyboard artist

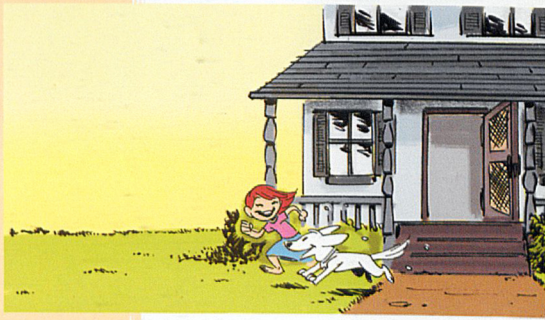
Destroyed Soundstage Development Paintings / Paul Felix / digital

Soundstage Fire Storyboards /
Joe Mateo, Byron Howard, Nathan Greno / digital

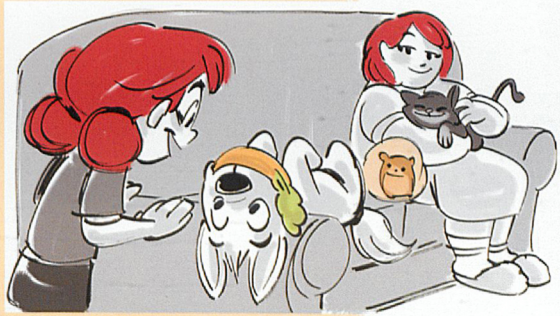
"There's now a sense of passing the baton between each film, sharing and integrating what each has learned. Back on *Chicken Little*, the challenge was 'Can we get the movie done?' Now, we know where we want to go, which is getting our digital studio to a mature state, where we don't have to reinvent the wheel each film but have tools to handle the complexity required to achieve the demands of story, art direction, and the audience's constantly changing expectations."

–COLIN ECKART, *Look Paint supervisor*

Farmhouse Painting / Bill Perkins / digital



> We feel like we're in good hands with John [Lasseter]. He told us in a meeting that when working on a movie, you want to make something you'll be proud of forever because we put so much of ourselves into it. And for him to say that, to feel the same way we do, felt great. It was just what we needed to hear as we made the final push on *Bolt*.
>
> **–JOE MATEO,** *storyboard artist*



Farmhouse Development Drawing / Bill Perkins / marker

Penny's Farm Storyboards / Nathan Greno / digital

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THE TRUST

By December 19, 2007, *Bolt* passed the midpoint of its allotted production lifespan. A towering Christmas tree had risen in the entrance rotunda of the Walt Disney Animation Building, but *Bolt* enjoyed no holiday respite. This was a particularly busy day—John Lasseter, splitting time between Pixar and the Burbank studio, was in the house for a day of *Bolt* production meetings.

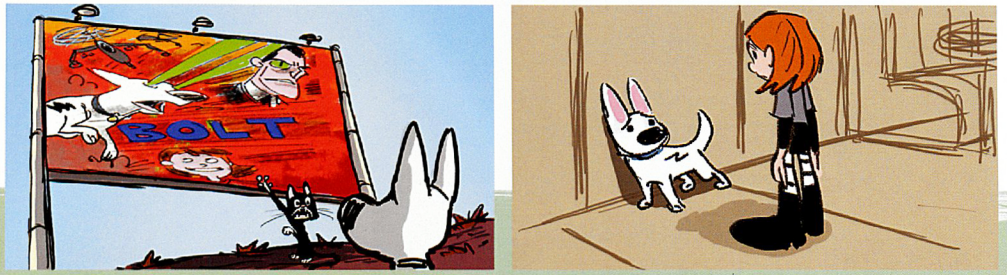
During a break, Byron Howard laughed as he likened *Bolt* to a cliff-hanger—would the underdog filmmakers, many of whom had never led a CG feature, succeed? By this halfway point, there was hard evidence they would. Art department manager Collin Larkins calculated that 75 percent of *Bolt* CG sets and locations were finished and 4,700 pieces of conceptual art produced. But with less than a year to go, there was still a lot of work ahead—Clark Spencer calculated that more than 90 percent of the movie still needed to be animated. But, this week before Christmas 2007, the production was still fine-tuning models and changing characters and story points.

Publicity Image / Renato dos Anjos, Kathy White, Jim Finn, Lino DiSalvo, Clay Kaytis / digital

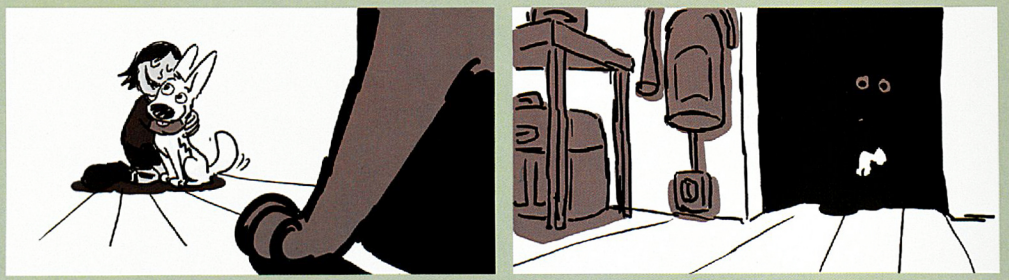
The first of a series of meetings with Lasseter saw production principals assemble in a screening room to watch loops of CG models, tests, and rough animation. Lasseter sat with a red pointer, commenting on everything from fur details on a rotating Mittens model to the need to bring out the sheen on her black coat. A shot of Mittens curled up in the dark corner of an animal shelter cage was problematic—more ambient and rim light was needed to separate the black character from the shadows. Another animated scene got Lasseter's attention—too blurry: the motion blur was cranked too high. He expanded upon the tendency of motion blur to calculate in a "linear" way and not handle curves, and he recalled once animating a circle so fast it became a triangle, while in *Cars*, his last Pixar directorial project, racing car wheels blurred so much they disappeared and had to be broken down "into little subframes" to get the curves.

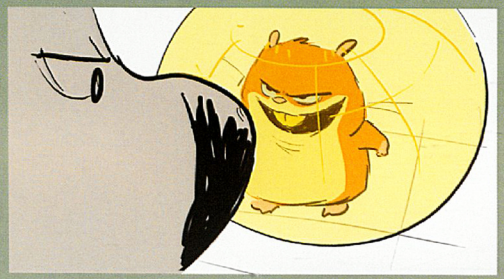
The new leadership of John Lasseter and Ed Catmull enriched *Bolt* with what animation supervisor Doug Bennett called "a culture of experimentation." There were Lasseter mantras, like "Truth in materials" (if something is made of metal, it shouldn't bend or stretch, for example), and an emphasis on the creative side, not the top-down filmmaking many felt characterized the studio in recent years. But, most of all, the new leadership brought in an unsurpassed knowledge of computer-graphics animation, a field they had pioneered, much as Walt had led the way in the realm of hand-drawn animation.

Later in a busy day, Clark Spencer sat in a spacious conference room and wistfully reflected on how wonderful it would be to simply "download" Lasseter and Pixar's quarter-century experience. In comparison, Disney was still charting its way along a steep learning curve. The next best thing was absorbing the



Bolt Storyboards / Chris Ure / digital





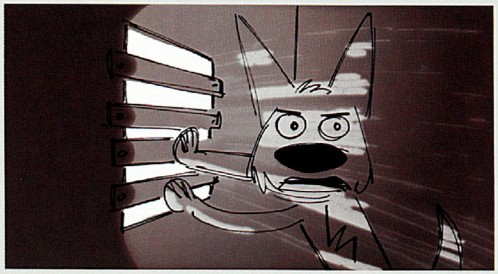
Road Across Midwest Storyboards /
Daniel Chong / digital

collective knowledge of Pixar's Brain Trust, which had begun when the core *Toy Story* team—Lasseter, Andrew Stanton, Pete Docter, Joe Ranft, and others—began making their own films but regularly met to share each other's work and open, honest, critical feedback. It made sense to do the same at Disney, Spencer observed, and *Bolt* benefited from Pixar's Brain Trust and Disney's new Story Trust, which had begun informally just prior to the arrival of Lasseter and Catmull. The ritual began each time a new story reel was prepared, with a screening in the Walt Disney Animation Building's theater, after which the Story Trust would come to this very room—the Story Room—to give its notes.

"The Story Trust was formalized when John Lasseter came in," Spencer reflected. "Pixar had success after success, but our recent behavior had been erratic. We'd sort of built walls between productions. When John Lasseter and Ed Catmull came in, John formalized the Story Trust—*every* director would be part of it, and everyone had to give his or her notes. It's been phenomenal to have the Story Trust come into this room, where we'd put all the tables in a big square, and collaborate with 15 of the best story minds in the building to make the movie better—storyline, character arcs, dialog, etc. The next day, we'd fly up to Pixar and screen it for the Brain Trust, then come back and figure out the right way to move forward. *Bolt* got the best of both worlds."

ARL director Lella Smith likened the creative feedback of the trusts to Walt's "original Brain Trust," the core group of animators called the Nine Old Men. "In both cases, a group of superbly talented artists had been entrusted to advance the aesthetic limits of the animation process," Smith noted.

Disney animation under Lasseter and Catmull was embracing the studio's heritage, including a return on *Bolt* to such traditions



Bolt Storyboards / Aurian Redson / digital

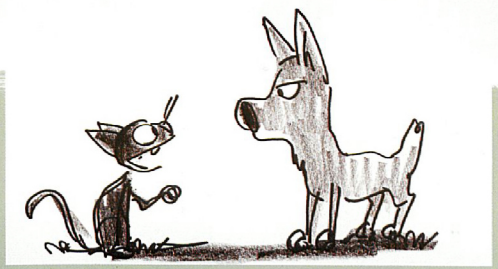
as taking artistic inspiration from life. The new leadership also decided to establish Walt Disney Animation Studios as a special entity by replacing the Sleeping Beauty castle icon that usually opened animated films with a pencil drawing that came to life as the seminal image of Mickey Mouse from *Steamboat Willie*. A classic logo of a waving, grinning Mickey that once graced the sign at Disney's original Hyperion Avenue studio began appearing on studio business cards, caps, and even a jacket Nathan Greno wears as a badge of honor. "I've wanted to work here since I was a kid, and, right now, I'm the most proud in the almost twelve years I've been here," he said. "For awhile it was like a committee was making the movies: we lost focus. It feels like we've hooked back into what made Disney great in the past—movies with compelling characters and a vision attached to them."

"What I love about [The Walt Disney Animation Studios] is that right across the street is where they animated *Bambi* and *Peter Pan* and *Sleeping Beauty*, and that at the ARL are millions of pieces of Disney artwork," Byron Howard said. "A lot of what keeps me wanting to work at this studio is this lineage that goes back to the beginning. I was mentored by Aaron Blaise, who was mentored by Glen Keane, who was mentored by Ollie Johnston, who was mentored by Fred Moore—there's this unbroken thread that goes back to the Hyperion studio."

Chris Williams recalls when he first arrived at the Animation Studios, animation legend Joe Grant, a character designer on *Snow White*, was just down the hall. Grant, a mentor and inspiration to Disney and Pixar creators alike, was still working until his death in 2005, at age ninety-seven. "All us young guys were so honored to have this man around who was such a part of Disney history.

He dedicated his life to animation and generating stories and making movies and that was him, that was his essence. Through him we felt a connection to Disney history and Walt Disney himself. On *Bolt*, Paul Felix would talk about drawing upon the Disney history of painted backgrounds, the things that separated us from other studios. It sounds corny, but we wanted to continue this rich history, and we tried to pull that into this movie."

Lella Smith, sitting in an ARL conference room and speaking at the midpoint of the *Bolt* production, held up a piece of original art being considered for inclusion in an art exhibit. It was a Bill Tytla concept painting of the *Fantasia* sorcerer, pictured at the moment he grabs his hat from his apprentice and restores the cosmic order—Yen Sid himself, his eyebrows arched in that restless, "good, but not good enough" pose. It was the lesson a young animator named John Lasseter absorbed during his early Disney days, brought to Pixar, and had now revived at Disney with *Bolt*.



Bolt Storyboards / Michael LaBash / digital

Waffle World Development Art / Jim Martin / graphite, digital

acknowledgments

Waffle World Icon Exploration /
Joe Moshier / digital

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Byron Howard / digital

Waffle World Icon Exploration /
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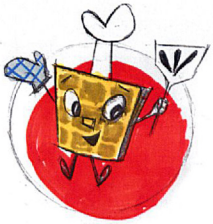


Waffle World Icon Exploration /
Joe Moshier / graphite, digital

Waffle World Icon Exploration /
Joe Moshier, Paul Felix / digital

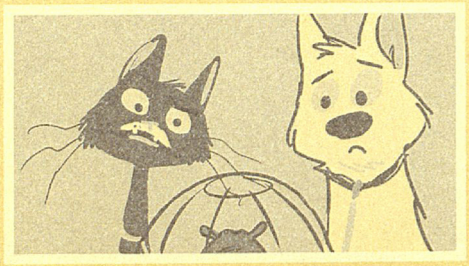
My thanks to Chronicle editor Matt Robinson for calling upon me to write this book and for his expert guidance along the way. The challenge was made easier by the wonderful support of Renato Lattanzi, Disney's project manager, Animation Consumer Products Marketing, who coordinated everything from arranging interviews to securing artwork. A tip of the hat to Leigh Anna MacFadden, director of Animation Publishing, who was in on the early discussions between Matt, Renato, and myself concerning the editorial approach to this book. My deepest appreciation to the production, particularly producer Clark Spencer, directors Chris Williams and Byron Howard, production manager Jason Hintz, dig lead John Murrah, art department manager Tom Meredith, and all the talented artists who shared their insights. One of the pleasures of this project was the chance to delve into Disney's rich history, and for that my warmest regards go to Lella Smith, director of the Animation Research Library, and her amazing staff, particularly researcher Doug Engalla. A fond huzzah as well to Disney's Howard Green, who has escorted me into the Magic Kingdom on many a past project. Finally, I thank my agent, John Silbersack, who has devoted his life to the power of books and gives his clients nothing less than his best.

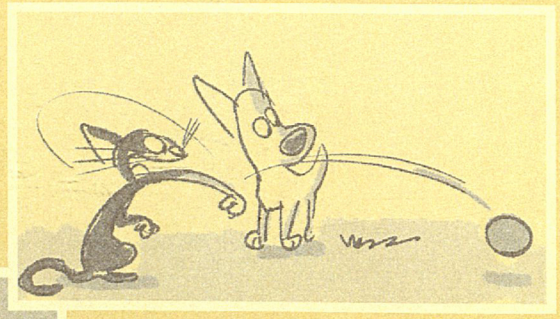
–MARK COTTA VAZ

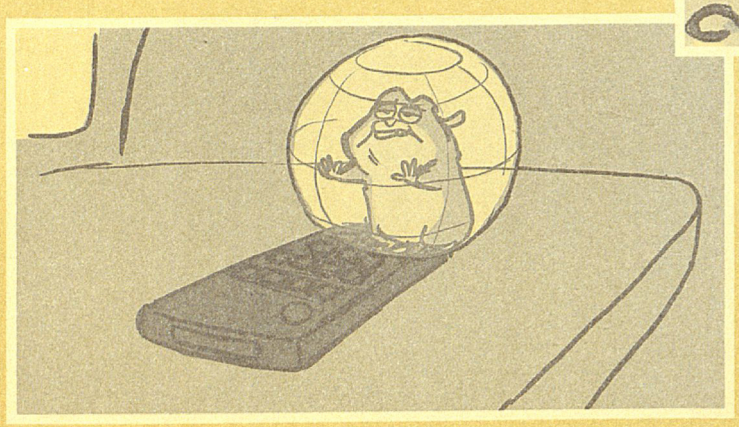
When Chris Williams took over the film, his confidence fed the confidence of other people. People look to their leadership to tell them how to feel about a film, and that's also where John Lasseter was so great. John talks about the early days at Pixar and how whenever he was getting wigged out or worried, Joe Ranft, who was his story partner for years, would be the calming voice. Joe would tell him, 'Trust the process.' John repeated that mantra to us, which was so reassuring when facing something so potentially scary and dealing with something very ethereal, the magic of what turns the switch to hopefully make people love a film.

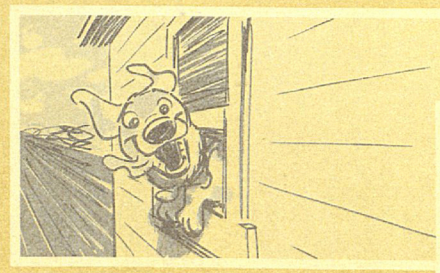
–BYRON HOWARD, *director*

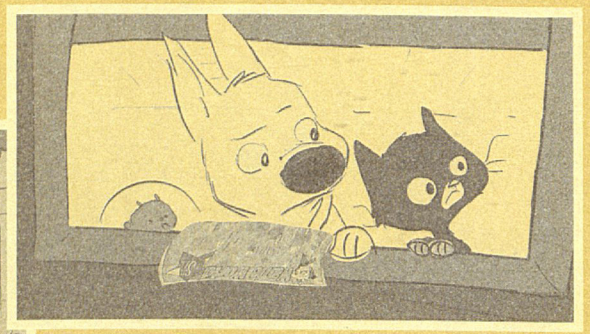
Bolt and Penny Character Drawing / Byron Howard / digital

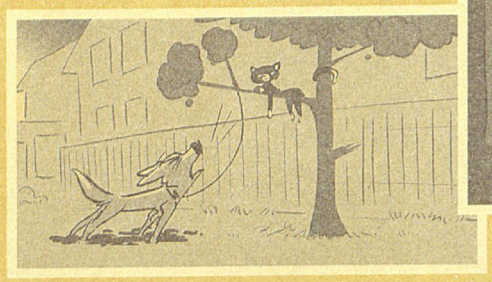


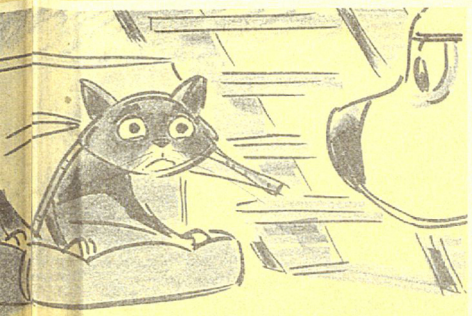


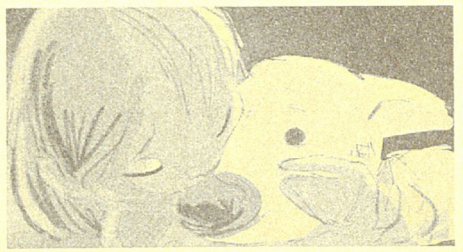


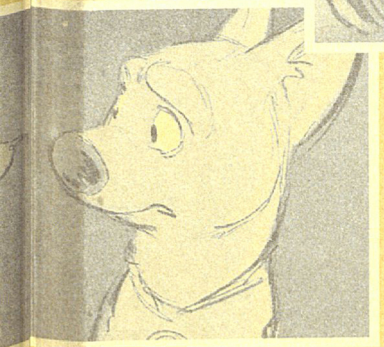


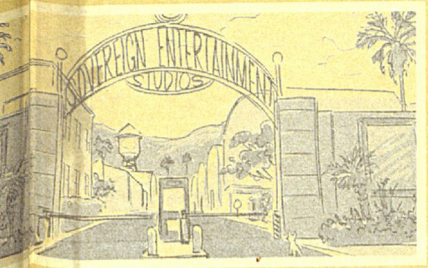












Mark Cotta Vaz is the author of twenty-four books, including *The Art of The Incredibles, The Art of Finding Nemo,* and *The Invisible Art.* He lives in the San Francisco Bay Area.

John Lasseter is the chief creative officer at Pixar and Walt Disney Animation Studios. A two-time Academy Award–winning director, he directed the groundbreaking and critically acclaimed *Toy Story, A Bug's Life, Toy Story 2,* and *Cars.* Most recently, he executive-produced *The Incredibles, Ratatouille,* and *WALL·E.*

Chris Williams is the co-director of *Bolt.* He joined Disney in 1994 as a key member of the *Mulan* Story Team. Chris pitched the original idea for the *The Emperor's New Groove* and wrote the story, for which he was nominated for an Annie Award for Outstanding Individual Achievement for Writing in an Animated Feature Production. He lives in Los Angeles, California, with his wife and daughter.

Byron Howard is the co-director of *Bolt.* He joined Walt Disney Feature Animation in 1994, where he has worked as animator on *Mulan* and a supervising animator on *Lilo & Stitch* and *Brother Bear,* among other films. Howard earned an Annie Award nomination for Outstanding Individual Achievement for Character Animation on *Brother Bear.* He lives in Glendale, California.

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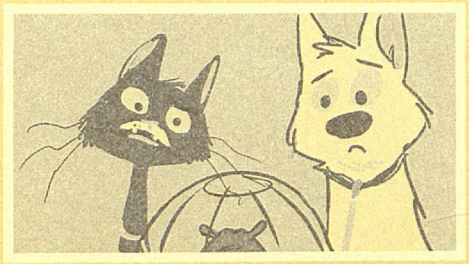

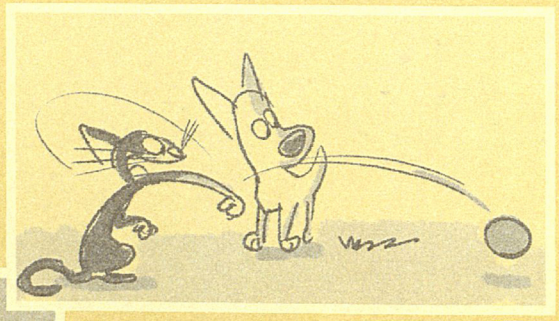

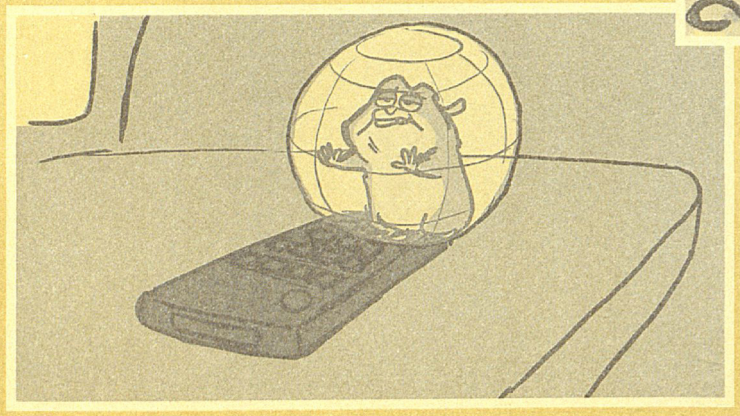

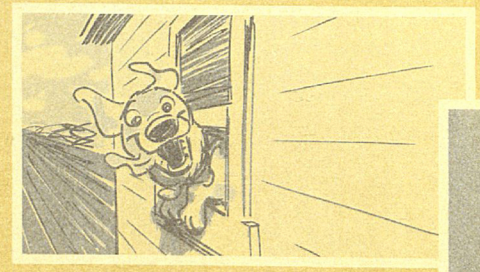

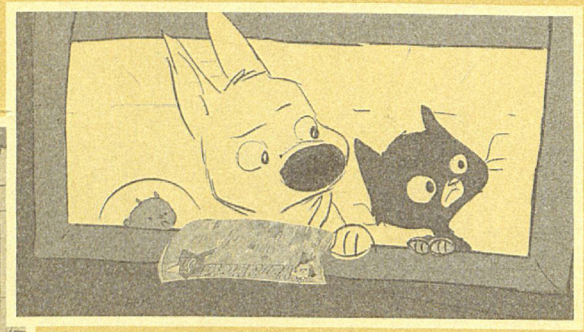

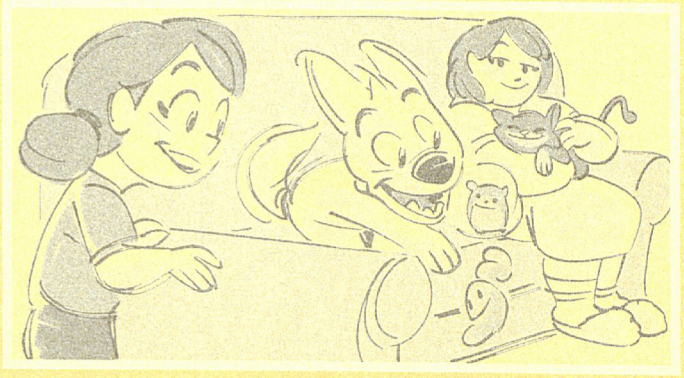

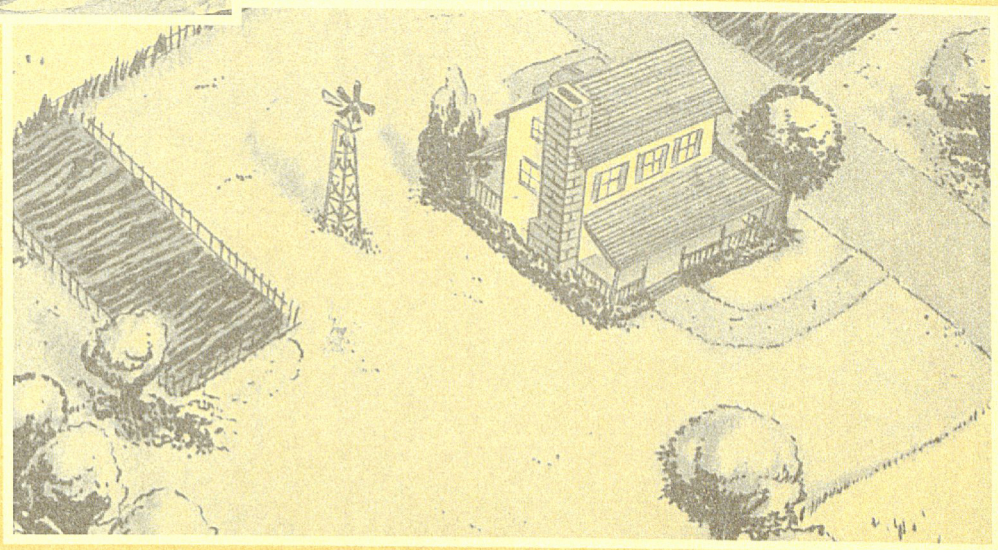

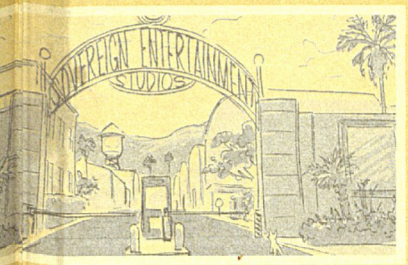
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BOLT

In *Bolt*—the new film from Academy Award-winning Walt Disney Animation Studios—the movie's creators built from scratch an ingenious animation process that blurs the line between hand-painted and computer-generated filmmaking. *The Art of Bolt* features more than 200 pieces of concept art that functioned as beautiful building blocks for the unique look of the film.

Walt Disney Animation Studios

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